# Job Guarantee Aff---GDS 2023

## Notes

### Notes

#### Explainers!

#### MMT

MMT and criticisms of it: https://www.vox.com/future-perfect/2019/4/16/18251646/modern-monetary-theory-new-moment-explained

#### Job Guarantee

Antoine Godin 23, Economist – Modeler at Agence Francaise de Developpement, “Employer of Last Resort,” Elgar Encyclopedia of Post-Keynesian Economics, Edward Elgar Publishing Limited, 01/26/2023, pp. 136–138 www.elgaronline.com, https://www.elgaronline.com/display/book/9781788973939/b-9781788973939.employer.last.resort.xml

Employer of last resort

The role of employer of last resort (ELR) for the State has been pushed forward by Minsky (1965) as a response to the war on poverty that the US president J.F. Kennedy started in the 1960s. The literature offers different names for the same policy such as Job Guarantee Programme or Public Service Employment programme. Minsky strongly criticized the economic policies put in place during the war on poverty (such as tax cuts) and advocated in favour of public works in order to reach full employment, the only state of affairs that could eradicate poverty.

Since then, ELR programmes have been declined in different versions according to how to set wages and benefits, target populations, types of projects to be included in the programme, administrative ways to deal with the programme, ways to finance it, and so on. Most of these descriptions are related to the Modern Money Theory school of thought and have been widely debated with post-Keynesian literature (see Palley, 2018, or Wray et al., 2018, for recent publications on the topic).

Wray (2007, p. 9) proposes ‘a universal job guarantee with a single compensation package for all participants’. He recommends providing full-time (or part-time when required by the applicant) jobs to anyone who is of legal age, able, ready and willing to work in exchange for a uniform wage and benefit package, fixed according to the living conditions in the country.

Education and training as well as job searching should be part of the activities proposed under ELR schemes. The administration of the programme should be highly decentralized in order to fit with the local realities. The federal government should provide funds for the employees and part of the capital cost of each project funded by the ELR scheme. The rest of the capital cost would be the burden of local governments. Each project would thus be implemented in cooperation between the federal and local governments and/or non-government organizations.

A rich discussion over the functions and impacts of ELR schemes has flourished, mostly within post-Keynesian literature. Their main benefits lie in the complete elimination of involuntary unemployment and its side-effects such as loss of skills or social and health costs of unemployment. This outcome has however been questioned, because it could lead to disguised underemployment (Sawyer, 2003), be structurally constrained and lead to conflict inflation, along Kalecki’s line (Kalecki, 1943; Ramsay, 2002; Palley, 2018) or would lead to a lowwage full-employment equilibrium (Seccareccia, 2004). Another heavily debated aspect concerns the impact on cost-pushed inflation by an ELR scheme. While proponents of the approach claim that it would de facto create an anchor for wages, similar to a minimum-wage policy, others claim that because it would be a minimum real wage, it would exacerbate inflationary pressure owing to nominal wage increase (Kadmos and O’Hara, 2000; Moudud, 2006; Palley, 2018). It seems that the counter-cyclical aspect of policy is commonly acknowledged, as well as its stabilizing aspect, as advocated by Minsky (1986). There is, however, a debate on its cost, its impact on the public deficit, and the ensuing demand-pull inflation or trade-balance worsening (Aspromourgos, 2000; Ramsay, 2002; Sawyer, 2003; see Mitchell and Wray, 2005, for a response to these critiques). Other aspects have been pushed forward, notably those praising the approach emphasizing the fight against poverty and inequality (Minsky, 1986; Wray, 2007), social justice and the right to work (Harvey, 2002) or its impact to achieving the Millennium Development Goals of the United Nations (Kregel, 2006). Critics have highlighted the opportunity cost of such a policy compared to other industrial or demand management policies, the risk of undermining the public sector or the fear of leading to compulsory work programmes (Palley, 2001, 2018; Sawyer, 2003).

The ELR’s transformational aspects have been highlighted. Forstater (2004, 2006) and Godin (2013) have shown the possibility of achieving social and environmental sustainability through the use of guaranteed green job policies, while Alcott (2013) has advocated for the ELR to be a supporting tool to a degrowth policy. In a different vein, authors have stressed the potential empowerment of women and gender inclusion effects (Antonopoulos, 2007; Papadimitriou, 2008; see Abukhadrah, 2017, for a critical analysis of the design of such policy to achieve these goals). On the other hand, it seems that the structural impacts of ELR have not been thoroughly examined, as pointed out by Kadmos and O’Hara (2000) and Moudud (2006). This has been also underlined by Godin (2014), who shows that depending on the structure of the economy, an ELR could lead to inflation or not and high-wage or low-wage full employment, making the case for a careful policy design, in combination with other fiscal or industrial policies.

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## Full Text

### Social Crisis ADV

#### Advantage one is SOCIAL CRISIS

#### Structural unemployment locks millions out of economic opportunity. It is a crisis of epidemic proportions.

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It took eleven long years after the Great Financial Crisis to bring the US unemployment rate to a postwar low of 3.5 percent. Still there were millions of people who could not find paid work. The official figure in February 2020 was 5.8 million, but with a proper count that number would be more than doubled.1 Job loss is not an affliction that touches everyone equally. It disproportionately affects the young, the poor, individuals with disabilities, people of color, veterans, and former inmates.

Growth, we are told, will raise all boats, but drawn-out jobless recoveries have been the norm for half a century now, and jobs have increasingly failed to deliver good pay. When we consider the question “When the economy grows, who gains?” we find a disturbing answer. In the immediate postwar era, as economies expanded after each recession, the vast majority of the gains went to the bottom 90 percent of families. The exact opposite has been true of the last four expansions (Figure 1).2 Since the 1980s, a growing economy primarily grew the incomes of the wealthiest 10 percent of families. Worse, during the recovery from the Great Recession, average real incomes for the bottom 90 percent of families fell in the first three years of the expansion.

[FIGURE 1 OMITTED]

Today, millions of people cannot find paid work, and millions more need above-poverty pay. Wages have stagnated for decades. Real average income for the bottom 90 percent of families was $34,580 in 2017, 2.2 percent lower than it was twenty years earlier. Meanwhile, real average income of the richest 0.01 percent of families grew by 60.5 percent during the same period (Table 1), and was nearly 556 times higher than that of the bottom 90 percent (or 1,000 times higher if we include capital gains).3

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Behind the unemployment and inequality numbers hide the millions of different faces, experiences, circumstances, and personal challenges of those dealing with joblessness and inadequate pay.

Maybe you are one of them or you know someone who is. Maybe you lost your job in the Great Recession and are now working two parttime jobs, struggling to pay the bills. Maybe you graduated high school, cannot afford college, and are looking to save some money first. Maybe the children have fled the nest and you, the stay-athome parent, would like to find paid work, but it has been decades since your last job and you don’t know where to begin. Maybe you’ve sent out 215 résumés already,4 but even in this “strong economy” you still cannot find stable well-paid work. Maybe it’s because of your age, gender, the color of your skin, or your criminal record. Maybe you are someone with a disability who wishes to work, but getting the kind of jobs you could do seems impossible and, if you do get one, the current law allows your employer to pay you as little as $1/hour.5 Maybe the firm found a “better” candidate. You keep knocking on the next door, emailing the next employer, but the call never comes.

The unemployment office is here to help – you take additional classes, spruce up your résumé, and practice your interview skills. You put your best foot forward but strike out again. Or maybe you are hired, but it’s only another low-paying job with no benefits. You barely make ends meet and the long commute and unpredictable shifts make coming home for dinner or doing homework with the kids a challenge.

You are willing to work hard for that job, but the job just isn’t working for you. And this time you are lucky. Remember 2009, the overcrowded unemployment offices, and the many online ads that said: “the unemployed need not apply”?6

But maybe you are none of the above people. Maybe you have an OK job, at least compared to your friends. The pay is not great but the firm promises opportunities for advancement. You can provide for the family and, after a few more months, you will finally earn that two-week paid vacation. The only problem is that your boss harasses you mercilessly. But you stick around. Could you really give up this “stable” job? And you are so close. You can almost smell the ocean.

Maybe you live in Puerto Rico, and your shop was swept away by Hurricane Maria. Many people died, many more fled, and a year and a half later one in twelve people on the island were still looking for work. Or maybe you escaped the California fires, but you lost your job and the FEMA money for your incinerated home is running out. You and many others in flood- and tornado-ravaged areas still need to pay the bills, and local communities still need rebuilding.

How many of these stories can we tell? In the US – millions; globally – hundreds of millions. The loss of one’s job and livelihood is not just a consequence of unusual circumstances or “acts of God.” It is a regular occurrence. The drumbeat of the economy, expanding in good times and shrinking in bad, along with outsourcing and technological change, creates ongoing job losses. And while new employment opportunities are also created, they are never enough for all jobseekers even at the peak of expansions. Meanwhile many workers are in unstable, poorly paid jobs. In 2018, there were 6.9 million working people earning below the official poverty level.7 For millions of Americans, one job is just not enough.

What if we changed all that and made it a social and economic objective that no jobseeker would be left without (at a minimum) decent living-wage work? What would be the impact on the lives of people, communities, and the economy?

Imagine that you go back to the unemployment office but this time, in addition to every other resource it offers, it also produces a list of local public service jobs, each offering a basic wage (say $15/hour), healthcare, and affordable quality childcare. You can choose from full- and part-time options. As it does now, the office continues to offer additional wraparound services including training, credentialing, GED completion, family-focused case management, transportation subsidies, counseling, referrals, and others.

These are local job opportunities in the municipality or local nonprofits (finally, a shorter commute), but they are federally funded (not that you care, a paycheck is a paycheck). The urban fishery is starting a new STEM program with local schools. The historical society is digitizing its maps and records. The Green New Deal has launched a comprehensive weatherization program and green infrastructure projects abound. A project is hiring for that waterpipe replacement that dragged on for years, and the cleanup of the vacant lot behind the municipal park needs workers. Local community groups are running outreach programs for veterans, the homeless, at-risk youths, and former inmates, and community health clinics are offering apprenticeships and training opportunities. A community theater is running afterschool programs for children and evening classes for adults.

All of these jobs were either nonexistent or the projects were sorely understaffed before the Job Guarantee was launched. If your community has been battered by extreme weather disasters or environmental hazards, the program will help staff the cleanup and rebuilding efforts and the region’s revitalized fire and flood prevention programs. And this entire menu of options is organized and supplied courtesy of the Job Guarantee. It is a program in cooperation with local and municipal governments and local nonprofit providers to ensure that no jobseeker is ever turned away.

The Job Guarantee office is there to help you transition to betterpaid employment opportunities in the private or public sectors. The economy is growing and new job ads promise opportunities for advancement, flexible hours, and telecommuting. With your additional experience and training, you line up some job offers. You say goodbye to the Job Guarantee and are off to the next opportunity.

Or maybe you do not need the Job Guarantee at all. After all, you are a highly educated and skilled individual with an entirely different professional experience – your career ladder is clear, your contacts are many, and you are able to jump from one opportunity to the next with ease. You earn a good income, provide for your family, and would never consider or likely need to apply for the Job Guarantee. But the program has helped rehabilitate your neighborhood, built community gardens in your kids’ schools, organized new programs and community events in the local library, and restored the nearby hiking trails and public beaches.

Can this become a realistic scenario? Can we put in place a program that provides a basic employment safety net for those who need it, while creating some much needed community work that benefits everyone in every state and every county, no matter how small or how remote? Subsequent chapters will argue that the answer is yes, and that we already know a lot about how to make it happen. Such a program would deliver overwhelming benefits – economic, social, and environmental.

Maybe these stories resonate and you can see the impact a public job option could have. With the Job Guarantee, you could find local work in a community project that mattered to you. You could say “no” to an abusive employer if you had a living-wage alternative. You could get a starter job before moving on to other opportunities, and save yourself the frustration of being rejected time and again by employers who may not like your sparse résumé. You would be able to avoid the stress of applying for food stamps and other government programs, because you have a living-wage job and can make ends meet. We are here just scratching the surface of the difference a Job Guarantee could make to the lives of the millions of people behind the unemployment and underemployment numbers.

But maybe these stories don’t resonate. It just sounds too good to be true. Isn’t there something called the “natural unemployment rate”? What can the government really do about it? Can it even create jobs and, if it tried, wouldn’t it distort market incentives? Maybe you worry that people wouldn’t work as hard if they weren’t afraid of being unemployed. Or that the program would ruin productivity. And how much would it cost? Isn’t it very expensive to hire millions of people? All of these concerns and more are addressed in the following pages.

The economics of unemployment is bad economics. One need not share the personal distress unemployed people and their families face to understand that hiring those willing to work is a much better economic approach than the one we have at present. Reaching that understanding is the task of the next chapter.

#### It’s a massive contributor to systemic death and suffering.

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The economics of employment is straightforward: a person will find a job if someone is willing to hire them. Typically, we think of firms doing all the hiring because they comprise about 80 percent of total employment in the US. And firm hiring depends on profitability. If customers are walking in the door, cash registers are ringing, and profits are rising, then firms will hire. And when sales and profits decline, mass layoffs result. But about a fifth of all jobs are created not for monetary gain, per se, but in order to meet some specific public purpose. Roads must be maintained, schools must be staffed, food and drugs must be inspected, security and justice must be provided. Non-profit, local, state, and federal government employment is devoted to serving the broader public interest. The argument put forth here is that hiring the involuntarily unemployed serves an important public purpose of its own – one that has been neglected largely because unemployment has been accepted as unavoidable and, even worse, as necessary for economic stability.

How “Natural” is Unemployment?

Suppose you heard that, in a strong economy, the optimal level of children who wanted to but were unable to receive primary and secondary education was 5 percent; or that there was a natural level of starvation equal to 5 percent of the population; or that 5 percent of people would ideally remain without shelter. Modern societies have arrived at the moral position that policy should do all it can to eradicate illiteracy, hunger, and homelessness. Without question, we can and must do much better in doing so, but we do not design or implement policy on the basis that there is some “optimal” level for these social ills. Our aspirations and ethical commitments are to guarantee access to schooling, food, and shelter to all.

And yet economists regularly talk about unemployment in these terms – as something that is not only inevitable, but also necessary for the smooth functioning of the economy – and formulate policies on the premise that there is a “natural” level of unemployment. This was succinctly put by Federal Reserve Chairman Jerome Powell in January 2019: “We need the concept of a natural rate of unemployment. We need to have some sense of whether unemployment is high, low, or just right.”1

What is the “right” number of people who are struggling to find paid work? Many economists fear that if unemployment is “too low” and labor markets are “too tight” then firms will have to raise wages to attract workers and in turn raise prices to recover those costs. Low unemployment, the argument goes, could cause high or even accelerating inflation, producing one of the clunkiest concepts in economics – the Non-Accelerating Inflation Rate of Unemployment (NAIRU).

Inflation-fighting central banks then aim to finetune the economy around the NAIRU.2 Countless think tanks, academics, and government institutions spend valuable resources on trying to identify this elusive “optimal level” of unemployment, while the actual number of unemployed people yo-yos around as the economy grows and slows down. The Congressional Budget Office (CBO) has maintained that the “natural level” throughout the postwar era was between 4.5 and 6.5 percent, and yet here we are today with official unemployment at 3.5 percent.

It is no consolation that Chairman Powell recently admitted, under oath, that the unemployment–inflation relationship has collapsed.3 The search for the NAIRU continues. Top economists vigorously defend it and the Fed’s explicit objective is to manage inflation by slowing down the rate of investment and hiring when unemployment gets “too low.”4

The trouble with this fine-tuning approach is threefold. First, the NAIRU is a myth.5 Economists (and the Fed) cannot figure out the nature of the unemployment–inflation relationship, nor whether it is even a causal one.6 Second, on its own admission, the Fed has no reliable theory of inflation either.7 Third, despite failing to pin down the NAIRU or the inflation target, Fed officials have been insisting at least since 2014 that the economy has reached full employment. Many will remember a similar experience in the 1990s, when experts kept warning that the economy has reached maximum employment, even as the unemployment rate kept breaking through every new official NAIRU estimate, with no accelerating inflation in sight. And like a scene from Groundhog Day, with NAIRU warnings on repeat, the unemployed people are caught in a jobless trap with no way out.

This problem is worse around the world. In 2012, the Annual Economic Forecast of the European Commission claimed that the natural rate of unemployment in Spain was 26.6 percent – the economy simply could not do better. And yet it did. As unemployment fell (granted, insufficiently) from its depression levels, the commission kept revising down its own NAIRU estimates. It is hard not to conclude that the NAIRU has provided cover for the profound policy failure of tackling unemployment head on.

This was not always the view from the Fed. In 1945, the Board of Governors put together a comprehensive report on the maintenance of full employment, production and living standards during the transition from a wartime to a peacetime economy, arguing that the “two evils [unemployment and inflation] … will not cancel out [and] both must be prevented.” The Fed outlined a sweeping long-term program for full employment and price stability that included a series of measures, among which the “Guarantee of Employment” was considered “perhaps the most essential part of the concept of a national minimum standard.”8 The Fed argued that this guarantee was “the first clause in a bill of economic rights,” and that a “fuller and better utilization of our resources, human and material, for the benefit of all” was a central national economic goal of the Federal Reserve itself.9

The Fed’s approach could not be more different today. Unemployment is sanctioned by government policy. The NAIRU has been used to rationalize policy responses that permit the deliberate slowing down of the economy and the increase of joblessness to tame inflationary pressures, thus reinforcing the existence of much economic hardship. But unemployment is not at all unavoidable, and direct measures to wipe it out are the superior policy option. Before we reckon with the high costs of the status quo, however, we need to address another pervasive myth – the idea that jobs are abundant and unemployment is an individual failure.

The Labor Market: A Catch-22 for Many

It is a common view that in a strong economy anyone who looks for work will be able to find it. Any difficulties they might have must therefore be due to some personal shortcoming – a lack of required skills, inadequate education, or poor incentives and decision making. Of course, for most economists “full employment” actually refers to a situation where millions of people are involuntarily out of work (whether through personal failings or not), not to a situation where anyone who is ready, willing, and able to work could actually secure a job.

[FIGURE 2 OMITTED]

In reality, even if one makes all the “right” decisions, the labor market is not a fair game. Even at the peak of an expansion, there are always more jobseekers than there are job openings (Figure 2). For many people the labor market is riddled with paradoxical catch-22 situations. The for-profit sector creates the vast majority of employment opportunities, but it is not in the business of hiring everyone who wants to work. As noted, firms hire staff when their sales and profits justify it, but there are many other reasons (apart from deficient sales) why they never employ all of the unemployed.

First, firms do not like to hire unemployed people, and especially the long-term unemployed.10 They prefer to hire people who are already working or have smaller gaps in their work experience. For the unemployed, this is a catch-22. During the Great Recession, as we noted above, some job ads even warned: “the unemployed need not apply” (a practice that was challenged in US courts).11 Furthermore, firms are reluctant to hire long-term unemployed people because they consider nine months of unemployment to be equivalent to four years of lost work experience.12

For many, the mark of unemployment is their main obstacle to securing a good job. Firms try to avoid the “risk” of hiring and training them, which produces a modern paradox: an economy in which millions are seeking work, while firms fret over finding qualified workers. This paradox is made worse by the fact that, as the economy grows, firms tighten their hiring criteria.13 This means that those who need to find work the most – the long-term unemployed – are precisely those facing the highest barriers to entry. Not only are they hired last and fired first – and so unable to build up sufficient work experience, gain job tenure, or grow their incomes – they are also most likely to be locked out of employment opportunities altogether when employers change the rules of the game. It is another catch-22.

Training and education do not resolve this paradox, though they may shuffle people around on the unemployment line. Over the last few decades, higher education has delivered soaring student loans, but not the jobs and incomes to pay them off. Like a Sisyphean boulder, crushing student debt has meant that young people are not able to afford a home, get married, or retain enough discretionary income, putting the brakes on economic growth. Another catch-22.

Even with training programs private firms have other criteria (visible and invisible) for exclusion. Discrimination on the basis of gender, race, age, and sex are well documented. Stay-at-home parents are about half as likely to receive a second interview as unemployed parents, and only about one-third as likely as employed parents.14 African American applicants without a criminal record are called back with an offer of a job or a second interview less frequently than white applicants with a criminal record.15 People with disabilities are systematically locked out of employment opportunities and have been the last group to see their employment rates reach pre-crisis levels.16

[FIGURE 3 OMITTED]

The Human Yo-Yo Effect

All of these challenges in the labor market, coupled with an economy that regularly lays off millions of people during recessions, have created a human yo-yo effect (Figure 3). Unemployment in the US is extremely volatile: it starts with an avalanche of mass layoffs in recessions, but recoveries are slow and anemic. Jobless recoveries have been accepted as normal and unavoidable. In the meantime, the share of long-term unemployment in total unemployment has steadily risen since the 1960s. Unemployment, in a sense, creates unemployability.

The labor market is a cruel game of musical chairs. In fact it is worse, because many unemployed people cannot find a chair (i.e., paid work), and if they do (especially in the low-wage sectors), they are often discriminated against, harassed, subject to wage theft, and under constant threat of losing their jobs and benefits.

There are not enough jobs, but there are not enough good jobs either. The policy of maintaining a reserve pool of the unemployed, the stacked obstacles the jobless face in the labor market, and the human yo-yo effect of mass layoffs, all inflict high costs on society and the economy.

Unemployment is Expensive

Just like we do not talk about the “optimal level” of homelessness or illiteracy, the notion of “optimal unemployment” would not survive long if economists took full account of its social and economic costs. A wealth of research from psychology, the cognitive sciences, and public health indicates that the costs of unemployment, poorly paid employment, unstable and erratic employment, and involuntary part-time employment are simply staggering. This suggests that we should think of unemployment and precarious employment as a disease – at once vicious, chronic, and deadly.

What one will not see by looking at the official numbers is that unemployment spreads like a virus. To get a sense of how it moves, it is useful to observe an animated geographical map of unemployment over time.17 The first thing one notices is that persistent joblessness (often in the double digits even during economic booms) does not just plague the Rust Belt and the Appalachian Mountains, but also affects countless communities from the Sierra Nevada to the Colorado Plains, the Coast Ranges, and the Deep South.

The second notable feature is that unemployment presents an unmistakable contagion effect. Imagine throwing a pebble into water – the initial shock creates ripples that move further and further away. This is what happens with unemployment. When recessions hit, mass layoffs in distressed areas spread and multiply like a disease from community to community. The loss of income and jobs causes those who have been laid off to drastically reduce their spending, which impacts neighboring businesses, who respond in turn by laying off other workers. And on and on it goes. In a sense, one unemployed person throws another one out of work.

Unemployment spreads like a disease in recessions, while in expansions it lingers in the epicenters of these outbreaks, creating chronic economic distress. Figure 4 gives a snapshot of the situation after the Great Recession, showing double-digit unemployment rates across the country well into the recovery, something one cannot see by looking only at the official aggregate unemployment statistics.

The metaphor of a deadly epidemic is apt. Without slipping into hyperbole, unemployment is literally deadly. Widely cited research by Case and Deaton18 found that increased mortality among working-class white men has been driven by “deaths of despair” resulting from the pain, distress, and social dysfunction following the loss of stable bluecollar work that began in the 1970s and continued well after the Great Recession. Economic insecurity and unemployment in particular have produced complex socioeconomic and health problems that have contributed to the rise in mortality, but the link between unemployment and dying is even more direct.

A metadata analysis of sixty-three countries found that one in five suicides are due to unemployment – an impact that is nine times higher than previously believed.19 Another panel study of twenty-five OECD countries supports these findings.20 Stuckler and Basu similarly find that, since the Great Recession, areas with higher unemployment rates experience higher suicide rates.21 Other research reports that long-term unemployment is associated with higher mortality twenty years after the spell of unemployment.22 For survivors and their families, unemployment is extremely costly. But it brings large costs to the wider economy as well.

[FIGURE 4 OMITTED]

The unemployed suffer a permanent loss of lifetime earnings23 and incur significant health costs – they are sicker, make more trips to the doctor, and spend more on medication. They have higher rates of alcoholism, physical illness, depression, and anxiety.24 This is the case around the world as well, according to a metadata study that examined several variables of mental health, including mixed symptoms of distress, depression, anxiety, psychosomatic symptoms, subjective wellbeing, and self esteem.25 All of these combined and complex health effects create a vicious cycle that makes it harder for unemployed people to reenter the labor market.26

Joblessness, it turns out, is its own catch-22 – creating the difficult personal and health conditions that prevent a person from escaping it. This paradox is made worse by the fact that unemployment drastically and permanently reduces a person’s social capital and participation,27 cutting them off from social networks and relations that are, for many, the bridge to re-employment. The isolation that unemployment brings is compounded by other well-documented scarring effects, such as a permanent decline in wellbeing, which linger even after a person has been reemployed. One study found that, of the total costs of unemployment, the nonmonetary costs are between 85 and 93 percent, overwhelming the costs of a permanent loss of income.28 This suggests that policies which mainly focus on providing income to the unemployed would be inadequate.

It should not come as a surprise – though it is altogether ignored by the research on the “natural rate” – that unemployment harms not just those who have lost their jobs but also their families. Unemployment is among the causes of malnutrition, growth stunting, mental health problems, poor educational and labor market outcomes, and reduced social mobility of spouses and children.29 In the US, children experience the highest poverty rate and 80 percent of poor children live in a family without a working adult.

Unemployment contributes to the entrenched urban blight and economic destitution in many communities and is a factor in violent and property crimes.30 Youth unemployment, crime, and right-wing extremism are strongly correlated.31 Globally, many countries are experiencing obstinate depression levels of youth unemployment – a ticking time bomb of social problems.32 In the US, unemployment among formerly incarcerated individuals is more than five times the national rate, higher than in the worst years of the Great Depression, while unemployment is a major factor in recidivism.33

Beyond the personal costs, there are also broader macroeconomic impacts of unemployment. It increases the general level of income inequality in most countries,34 and produces social exclusion that exacerbates interracial and interethnic tensions.35 It has a negative impact on technological change, innovation, and output, and is a contributing factor to financial crises and economic instability,36 as well as to social and political instability, human trafficking, forced and child labor, exploitation, and slavery.

As if that were not enough, unemployment also depresses economic growth. In the midst of the Great Recession, according to one estimate, the US economy lost $10 billion of output each day as a result of high levels of unemployment.37 (For comparison purposes, this amount is equivalent to the annual budget of the Environmental Protection Agency for 2016.) Even at the peak of the expansion in 2007, when unemployment was relatively low, the daily GDP loss from unemployment was around $500 million.

In other words, we give up millions of dollars of goods and services every day, while carrying the enormous personal, social, and economic costs of unemployment, because we have accepted it as natural, unavoidable, and necessary.

Unemployment is already paid for. We forfeit the social and economic value we could generate by eradicating it, while carrying its real and financial costs. It is a global problem with global implications. It is a cancer – linked to the gradual ruin of communities, the collapse of the social fabric, the opioid epidemic, poor child health and education outcomes, overcrowded prisons, mental and health deterioration, to name just a few of its overwhelming effects. These are unnecessary costs. Most of them could be avoided with a program that guarantees a basic living-wage job to all.

#### Only a job guarantee solves. It fundamentally restructures the economy, ends US poverty AND inequality, and empowers the public sector to channel resources toward collectively beneficial projects.

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Poverty in the United States is persistently high even though the nation is one of the world’s wealthiest and most prosperous. Because an estimated 43.1 million Americans still live in poverty, some 13.5 percent of the population, conditions demand that the country take fresh action (Proctor, Semega, and Kollar 2016).1 Tools to alleviate the unnecessary suffering exist, [End Page 44] but they need to be activated (DeNavas-Walt and Proctor 2014). The United States does have a complicated array of social insurance programs in place that reach some of those in need: among them unemployment insurance, the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), and disability benefits—both Supplementary Security Income and Social Security Disability Income.

Fighting poverty as a national priority is not a recent development. Fifty-two years ago, President Lyndon B. Johnson declared his War on Poverty, proclaiming that “many Americans live on the outskirts of hope—some because of their poverty, and some because of their color, and all too many because of both. Our task is to help replace their despair with opportunity” (1964). On the fiftieth anniversary of his declaration, the Council of Economic Advisors issued a progress report. The conclusion was that far too many Americans still experience poverty, in part because of “unemployment . . . inequality, wage stagnation, and a declining minimum wage” (2014).

The current social insurance regime has cut poverty rates nearly in half—reducing them from an estimated 27.3 percent for persons without government assistance to 15.3 percent after the programs mentioned are taken into account (Greenstein 2015). These programs certainly have reduced poverty, but the social insurance regime has shifted to a “work-based safety net,” providing the majority of assistance to the working poor—a group that would not exist under our proposed program in the first place. The changes in social insurance programs implemented under the Personal Responsibility and Work Opportunity Reconciliation Act (the 1996 welfare reform) resulted in a significant decline in government programs that provide benefits to people without earnings, contributing substantially to the increase in “deep poverty.”2

During the Great Recession, one of the largest holes in the current safety net became highly visible—the lack of support for the jobless. At the height of the crisis, conservative measures of the level of unemployment indicated that more than fifteen million Americans (10 percent of the labor force) were out of work (U.S. Bureau of Labor Statistics 2017).3 They were unable to make a contribution to traditional measures of economic productivity and economic growth, and they were struggling desperately to provide for themselves and their families. Broader measures of unemployment, such as U6, that better capture hardship during economic downturns indicate that 17.1 percent of workers were unemployed or working part time, despite wanting full-time employment.4

Figure 1 demonstrates just how large the gap became between the number of those seeking jobs and the number of jobs offered during the Great Recession. No amount of individual effort—hard work nor “pull yourself up by your own bootstraps” drive—could overcome the dramatic shortage of jobs available during the cyclical decline.

Moreover, unemployment is one of the strongest predictors of poverty, households whose usual breadwinners are out of work being three times more likely to be poor than working households (Achiron 2009, 13). But working households are not immune from the plague of poverty; a job in and of itself is not a sufficient condition to escape poverty. Given that at least 25 percent of workers earn wages below the poverty line (Mishel et al. 2012), and 44 percent of homeless individuals report having taken on paid employment in the past month (Burt et al. 1999), nonpoverty wages [End Page 45] need to be an essential component of reducing poverty.

[FIGURE 1 OMITTED]

Furthermore, the costs associated with unemployment go far beyond poverty. The nature of the harms from unemployment or underemployment are well documented. In addition to inflicting lasting damage on an individual’s labor market prospects, unemployment is associated with increased rates of physical and mental illness, alcohol and drug abuse, child and spouse abuse, failed relationships, suicide and attempted suicide, and a host of other personal and social ills (Goldsmith, Veum, and Darity 1997; Darity 2003).

Unemployment does not affect all groups equally; it varies greatly by race, as demonstrated in figure 2. Historical data indicate that unemployment rates for black workers are consistently twice those of white workers. This gap persists among groups with more education as well, with recent black college graduate unemployment at 9.4 percent, versus 3.7 percent among their white counterparts in 2016 (Bivens 2016).

In fact, the differential is so pronounced that there are many months when the Bureau of Labor Statistics reports that blacks with some college education have a higher unemployment rate than whites who never finished high school. Even when black students complete degrees in a statistics, technology, engineering, and mathematics (STEM) field, ostensibly fields in high demand by the labor market, they still experience markedly higher rates of unemployment. They also are more likely to end up in jobs that do not require a STEM degree (Jones and Schmitt 2014). Since 1972, unemployment has averaged double digits for black workers but has never fallen below 7 percent—a level reached only during times of economic crisis—for white workers.

But the ills of unemployment and poverty can be resolved by direct government action. In his 1944 State of the Union address, Franklin Delano Roosevelt introduced what he called an Economic Bill of Rights. The first “article” was a right to employment. In the absence of the provision of adequate opportunities for work by the private sector, demonstrated by the jobs gap [End Page 46] in figure 1, Roosevelt envisioned the maintenance of a public-sector option for employment for all. However, Roosevelt’s bold aim has not been realized, even if its ambition is embodied in the Full Employment and Balanced Growth Act of 1978.

[FIGURE 2 OMITTED]

This is unfortunate because a well-designed federal job guarantee (FJG) program would be a direct route to full employment and simultaneously eliminate involuntary unemployment and poverty in America.5 Such a program could be informed by and modeled after Great Depression–era projects such as the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC), as well as Argentina’s Jefes y Jefas and India’s National Rural Employment Guarantee (for Argentina, see Tcherneva and Wray 2005; for India, see Muralidharan, Niehaus, and Sukjtankar 2017). Any American wanting a job, at any time, would be able to obtain one through the public employment program.

The FJG would reach persons in the workforce who are subject to persistent exclusion from work, ensuring their capacity to secure employment. Groups continuously subjected to higher odds of joblessness, including exoffenders, recent military veterans, and racial-ethnic groups who experience discrimination, would be assured decent work at nonpoverty wages (Schmitt and Warner 2010; Loughran 2014; Darity 2003).6 These are the same groups subject to stubbornly high rates of poverty, in part because of their weaker job prospects (Proctor, Semega, and Kollar 2016; Western and Pettit 2010). The persistent racial unemployment gap, as discussed, would effectively be eliminated by the FJG.

By establishing a condition whereby the lowest paid job in the FJG program offers nonpoverty wages and benefits, including health insurance for the worker and their family, the federal job guarantee would set a new economy-wide floor on the level of compensation that the private sector would need to offer to attract workers. Minimum wage laws and living wage standards [End Page 47] are effective only to the extent that employees actually have jobs. A FJG, on the other hand, would combine an assurance of employment with an assurance of decent compensation.

The FJG also will function as an automatic stabilizer, its numbers of participants expanding during economic downturns and contracting during more prosperous times. Other articles in this double issue make important contributions on how best to improve and expand the existing system of social insurance. Our proposal offers a bold, yet historically grounded, alternative. The FJG fundamentally would alter the nature of poverty and the structure of the labor market by mandating a full employment economy achieved by the government taking the function of direct job creation.

Some of the authors have been advocates of a FJG for several years (Darity 2010, 2012; Darity and Hamilton 2012), but a number of issues and criticisms have been advanced about the FJG policy. Our objective is to provide a comprehensive design for a FJG that explicitly addresses these central criticisms and to further explore the impact of a FJG on poverty.7

THE PROPOSAL

We propose passage of legislation guaranteeing every American over the age of eighteen a job provided by the government via the formation of a National Investment Employment Corps (NIEC) (Darity 2010; Aja et al. 2013). The permanent establishment of the NIEC would eliminate persistent unemployment and poverty, ensuring that the United States is able to achieve full employment, as outlined by the Full Employment and Balanced Growth Act of 1978. Related legislation has already been introduced by U.S. Representative John Conyers (D-MI) in House Resolution 1000 (H.R. 1000).

This proposal moves beyond the incremental changes typically advanced as policy solutions for major social problems. Our proposal, decidedly non-incremental, aims to bring about pronounced structural change in the American economy. The FJG could simultaneously achieve the goals outlined in other proposals in this double issue (see Romich and Hill 2018; Dutta-Gupta et al. 2018). Rather than potentially operating de facto to subsidize low-quality jobs, our proposal effectively eliminates poverty for those willing and able to work by providing a guaranteed job at nonpoverty wages. This will set a floor for a decent standard of compensation in the labor market and fulfill the Humphrey-Hawkins full employment mandate.8 The proposal is predicated on the view that there is an absolute shortage of decent jobs, rather than there being insufficiently skilled workers to fill vacant positions in the private sector, as we demonstrated in figure 1.

Unlike other proposals in this double issue, many of which require people to first be exposed to poverty prior to gaining access to the benefits of the social safety net, our proposal is intended to preempt exposure to poverty altogether. Under the FJG, all workers seeking employment would be employed at the local, state, or federal level by the NIEC. The program would provide meaningful and remunerative employment across an array of public works projects addressing both the nation’s human and physical infrastructure needs.9

To simultaneously provide full employment and rid the United States of working poverty, workers would be paid at least $11.56 an hour. This wage rate would yield a salary of $24,036 a year at forty hours per week of year-round employment, equal to the poverty line for a family of four (DeNavas-Walt and Proctor 2014).10 This wage rate represents a minimum [End Page 48] entry level wage, but the program would be designed to enable workers to achieve promotion—and higher wages. We estimate a mean wage income for all employees of approximately $32,500.

In addition to wages, workers would be guaranteed a benefits package.11 We estimate that an additional $10,000 will be spent per worker per year to provide adequate health insurance and standard retirement benefits. This insurance would be comparable to current health insurance programs offered to federal employees and members of Congress. Beyond health insurance and retirement, employees would be guaranteed other benefits, including paid family and sick leave and one week paid vacation per three months worked. Again, we emphasize that compensation and benefits package will set a new floor in the labor market—compelling employers to provide competitive compensation packages, or risk losing workers to the FJG program.

Projects and employment under the program will be coordinated across the various levels of government—local, state, and federal—as well as the Indian Nations.12 At the federal level, we anticipate a wide array of major public investment activities, which may include fostering a transition to a green energy economy, extending access to high-speed rail, improvements in our public park service, revival and product diversification for the postal service, and an increase in general services across the economy.13

At the state level, we anticipate the states to undertake major infrastructure investment projects, as well as projects to improve the services they offer to their citizens. At the local level, we expect communities to undertake community development projects, provide universal daycare, maintain and upgrade their public school facilities, and improve and expand the services provided by their libraries.

In table 1, we provide three cost estimates for the proposal. Each estimate assumes the economy reaches full employment, by which we mean the elimination of both cyclical and structural unemployment. We assume U6 would be brought down to 1.5 percent.14 In column [End Page 49] one, we provide a snapshot of the FJG program’s costs drawing on experiences from the recent Great Recession. According to the Bureau of Labor and Statistics, the official peak unemployment rate during the Great Recession was 10 percent (15.3 million Americans).

[TABLE 1 OMITTED]

We believe these figures grossly underestimate the numbers of workers in need during the Great Recession. Considering a broader measure of unemployment (U6) provides us with a more reasonable estimate for the number of workers that may seek employment through the FJG. During the peak of the crisis, U6 reached 17.1 percent. Removing those under the age of eighteen, since minors would not qualify for the program, we find that an estimated 24.1 million workers might have sought employment under the program. However, this might be an unrealistically high estimate of expenses, if the FJG has been in place prior to the recession. Due to its buffer stock mechanism, employment shocks would have been moderated and full employment would have been maintained.

Next, we also estimate two scenarios under recent economic conditions using July 2016 employment data. The first scenario assumes modest uptake under the FJG, on the assumption that all workers currently counted in U6 engage in employment through the National Investment Employment Corps (NEIC). In this case, 13.2 million workers may seek employment, demanding 11.9 million full-time equivalent jobs. The gross cost of the program, including [End Page 50] benefits and materials, would be $654.6 billion.

The second case based on recent labor market conditions estimates program uptake and expenditures assuming workers earning wages below the minimum offered by the NEIC also would partake in the FJG. Although we believe U6 provides a reasonable approximation of program uptake, we recognize that the establishment of a FJG will transform much of the labor market. In turn, we analyze a third estimate that represents an upper bound for uptake and cost under a FJG. This estimate assumes that all workers currently earning below the base wage offered by the NEIC (about one-quarter of all employed workers according to Bureau of Labor Statistics data), plus workers counted under U5, will seek employment with the NEIC.15 Under this scenario, program costs would increase sizably.16

Although these are large initial employment and cost projections, the macroeconomic stimulus effects from such a program would be substantial, generating significant employment in the private sector, thereby mitigating workers’ demand for public-sector employment—and contributing to cost containment. Philip Harvey estimated the indirect job creation effect of a government direct jobs program, similar to the FJG, and calculated that, for every directly created job by the government, 0.26 indirect jobs would be created through the private sector (2011).17

Costs associated with the FJG only represent half of the equation. The initial cost of the FJG would be offset by significant cost savings through reducing enrollment in many existing federal and state social insurance programs, by maintaining state and municipal tax bases, by increasing the growth rate of gross domestic product (GDP), and by substantial productivity and capacity gains in the U.S. economy.

The Congressional Budget Office’s baseline projections provide cost estimates for the major social insurance programs over the next decade, from 2016–2026, which we present in table 2 (Congressional Budget Office 2016). Following the successful rollout of the FJG, the number of beneficiaries eligible for SNAP is likely to fall substantially. Unemployment insurance, which peaked at $162.5 billion in 2010, would be reduced significantly because workers would have an option to obtain employment through the FJG (see Congressional Budget Office 2012).18 TANF also could be nearly eliminated [End Page 51] because the FJG would fill the gap for those in need.19

[TABLE 2 OMITTED]

In addition, fewer families would likely qualify for the existing Earned Income Tax Credit (EITC) plan.20 For instance, those working without dependents would no longer be eligible, as their income exceeds the threshold to qualify for the EITC. Those with dependents would likely see a decrease in their EITC because the level of compensation under the FJG will place most households beyond peak benefits. Through the reduction of these programs, coupled with the economic returns from investment under the program such as green energy and infrastructure, we believe a substantial portion of the costs of the FJG will be offset; hence, the net additional expenditures required for the program would be considerably less than the total costs estimates reported in table 1.21

On a per-dollar basis, the FJG would be more effective in creating jobs than the indirect incentive effects of stimulus measures, like those pursued under the American Recovery and Re-investment Act (ARRA) of 2009. The ARRA came to the tune of $787 billion. The Economic Stimulus Act of 2008 added another $170 billion. Alan S. Blinder and Mark Zandi add the total bill for fiscal stimulus in the government’s attempt to curb the recession, estimating a grand total of $1.067 trillion (2010).22 The indirect job creation costs through the ARRA is estimated at $100,000 spent for each full-time job year (Dube, Kaplan, and Zipperer 2014), which is [End Page 52] substantially higher than the costs we estimate for direct job creation, which also would generate indirect job creation stimulus (for an in-depth discussion of the job efficiency of direct government job finance as opposed to other forms of government stimulus, see Harvey 2011).

Under the FJG, the money would primarily flow into the hands of those in need. This was not necessarily the case under the responses to the Great Recession. For example, Juan Montecino and Gerald Epstein find that quantitative easing actually exacerbated income inequality through equity price appreciation (2015). In contrast, the FJG affords a direct countercyclical approach to smooth business cycles, eliminate poverty-wage employment, and boost long-term growth.

Although benefits effectively will disproportionately aid the poor and those struggling to find private-sector employment, the private sector could see a boost as well. Because the poor have a high marginal propensity to consume, aggregate demand would be maintained—or even rise, leading to increased demand for private-sector goods. Plus, the countercyclical effects of the FJG will help maintain aggregate demand during future recessions. Also, the improved physical and human infrastructure efficiency resulting from the program will facilitate productivity gains for the private sector as well.

Workers under the NIEC will be able to acquire the necessary skills, opportunities for advancement, on-the-job training, and professional experience to aid in long-term career development. These advantages to workers will be provided in part through a training provision under the FJG. As shown by the CCC, the WPA, Argentina’s Plan Jefes, and India’s National Rural Employment Guarantee, even low-skilled workers can be assigned to valuable work in a relatively short time. Although some jobs in the FJG will rely on basic labor, others will require workers with additional skills. Through a federally maintained jobs bank, projects will be matched with the skills of the local workers in need of employment. This is similar to the content of Representative Conyers’ bill (H.R. 1000) and will minimize any potential skills mismatch issues.

Because workers have the option to freely enter or exit the FJG, employers who pay below the nonpoverty wage established by the FJG and fail to offer competitive benefits will not be able to attract employees, except perhaps those interested in part-time or temporary work, or motivated to work in such jobs for less pecuniary reasons. Therefore, the FJG acts as an effective wage floor, reducing economic inequality, especially at the low end of the income distribution.

The transformative nature of this proposal on the labor market should not be underestimated. Productivity and the real minimum wage once rose in tandem, but have diverged since the 1970s (Cooper 2015). By functioning as an employer of last resort, the government greatly improves the bargaining power and fall-back position of workers in general by removing the threat of unemployment and effectively eliminating involuntary unemployment.

By providing a job guarantee, the proposal has the added advantage of greatly reducing the unemployment, underemployment, and poverty of permanently stigmatized groups, which are subject to discriminatory exclusion from employment opportunities. For instance, field experiments conducted by Devah Pager in Milwaukee, Wisconsin, and in New York City reveal that among males of comparable ages and levels of education, white males with criminal records were more likely to get callbacks for jobs than black males with no criminal record (Pager 2008). It is noteworthy that the use of criminal background checks is outlawed for most jobs in Milwaukee; nonetheless, Pager finds that workers signaling prior incarceration were still substantially less likely to receive call-backs there.

#### Poverty outweighs---it’s a massive direct mortality risk AND exacerbates every genre of existential threat.

Max Ghenis 21, Founder and President of the UBIN Center, “Mortality, existential risk, and universal basic income,” UBI Center, 11/30/21, https://www.ubicenter.org/mortality-existential-risk-ubi

Poverty and mortality

The strong correlation between income, poverty, and mortality has long been known, across geographies and over time.3 In 2016, a 1 percent increase in per-capita income across countries was associated with an extra 0.06 years of life expectancy, a reduction in infant mortality of 0.16 percentage points (pp), and a reduction in child mortality of 0.23pp. The extreme poverty rate, defined as $1.90 per day of consumption in 2011 dollars, is also associated with these measures of mortality, even when controlling for per-capita income. A 1pp decrease in the extreme poverty rate is associated with an extra 0.30 years of life expectancy, a reduction in infant mortality of 0.75pp, and a reduction in child mortality of 1.03pp.4

Empirical economics research, which applies tools such as randomized controlled trials and identification of “natural experiments” to establish causal relationships, indicates that this is more than correlation: poverty conclusively shortens lives.

Evidence comes largely from cash transfer programs, studies of which compare recipients to similar people who, due to chance or circumstance, happened not to receive the transfers. Cash transfers fall into two categories: conditional cash transfers (CCTs), in which eligible households must take some action like schooling or vaccinating children to receive the transfers, and unconditional cash transfers (UCTs), which carry no requirements. UBI is essentially a regular, universal UCT set at an amount that covers basic needs.

The simplest form of evidence is randomized controlled trials (RCTs), in which individuals are randomly assigned to a treatment or control group, as in medical trials. An RCT in Rwanda, for example, found that a one-time $500 UCT to households that contain poor or underweight children, or pregnant or lactating women, reduced child mortality by 70 percent compared to a control group.5 However, the small sample size—two children died in the treatment group, compared to 13 children in the larger control group—justifies considering other evidence as well.

When cash transfers aren’t randomly assigned, they can often be evaluated when governments deploy them semi-randomly, as Mexico did when it staggered the rollout of its Progresa CCT across geographies. Compared to households who would have received Progresa transfers if they’d been in early-rollout areas, treated rural households experienced 17 percent less infant mortality, though neonatal mortality did not significantly change.6 Brazil’s similar CCT, Bolsa Familia, reduced child mortality by between 6 and 17 percent.7

In 1911, the US government established its first welfare program, the Mother’s Pension Program, which provided cash transfers representing 12 to 25 percent of family income, generally for about 3 years. Male children of mothers accepted for the US Mother’s Pension Program lived one year longer than male children of mothers who were rejected after initial acceptance (Aizer et al., 2016). This study also reported other medium-term outcomes, which can help estimate the effects of other cash transfer results for which mortality data is not yet reliably available. The program “resulted in a significant 50 percent decrease in under-nutrition, a 13 percent increase in income, and an increase of 0.4 years of school among young adults.” By comparing these results to other research on mortality and being underweight (Flegal et al., 2005), income (Deaton & Paxson, 2001), and education (Cutler & Lleras-Muney, 2006), the authors establish that education and income explain 75 to 95 percent of the longevity increase, while the underweight channel explains a small share.

Cash transfer experiments have established robust causal relationships between poverty and intermediate outcomes identified in the Mothers Pension Program study. A $1,000 UCT to extremely poor households in Kenya raised subsequent earnings by $270.8 UCTs in Malawi and Zambia raise school enrollment by between 4 and 19 percentage points.9 A UCT in Rwanda also raised height-for-age and weight-for-age, indicators of healthy child development.10

With time, researchers will be able to follow up with treatment and control groups from these experiments to determine long-run mortality effects. This will add precision to the existing finding that poverty shortens lives, via channels including income, education, and nutrition.

Poverty and existential risk

Poverty is not itself an existential risk, nor is it directly related to any likely candidates. However, poverty destabilizes society through short-termism, isolationism, and other problems, and that instability raises the risks of extinction.

Through a combination of evidence and expert opinion, Ord estimated the probabilities of each type of existential catastrophe, as shown in the table below.11 He acknowledges that these probabilities are somewhat speculative, saying, “Their purpose is to show the right order of magnitude, rather than a more precise probability.” Nevertheless, it provides a guide for prioritizing the risks, identifying patterns across them, and especially, for determining the most effective ways to reduce them.

EXISTENTIAL CATASTROPHE VIA CHANCE WITHIN THE NEXT 100 YEARS

Asteroid or comet impact ~1 in 1,000,000

Supervolcanic eruption ~1 in 10,000

Stellar explosion ~1 in 1,000,000,000

Total natural risk ~1 in 10,000

Nuclear war ~1 in 1,000

Climate change ~1 in 1,000

Other environmental damage ~1 in 1,000

‘Naturally’ arising pandemics ~1 in 10,000

Engineered pandemics ~1 in 30

Unaligned artificial intelligence ~1 in 10

Unforeseen anthropogenic risks ~1 in 30

Other anthropogenic risks ~1 in 50

Total anthropogenic risk ~1 in 6

Total existential risk ~1 in 6

The first thing to note is that natural risks represent less than a thousandth of the total existential risk. This is in some ways encouraging, since there’s little to be done about them, except perhaps becoming a multiplanetary species more quickly.

The second is that risk probabilities vary by orders of magnitude. Nuclear war and climate change are major threats, but each is less than a hundredth as likely as unaligned artificial intelligence (which I’ll describe later). This isn’t to say nuclear war and climate change couldn’t kill millions, even billions of people; they’re just unlikely to kill everyone on Earth.12

The third, and most relevant to this analysis, is that the risks share common threads. Avoiding nuclear war and engineered pandemics will require international safeguards of hazardous material. Avoiding unaligned artificial intelligence will require a more patient approach to developing this transformational technology. Avoiding disasters from climate change—and to a large degree, all these risks—will require both international cooperation and emphasis on sustainability.

As a growing share of the world’s population—now over half—lives under democracy,13 the extent to which individual citizens support cooperation and sustainability will affect country-level outcomes.

The available evidence suggests that lifting people out of poverty increases their future orientation and trust in the institutions, thereby increasing support for future-oriented, globally-cooperative public policy. Poverty reduction may also address specific risks, and I discuss its links to three of the top ones: climate change, pandemics, and unaligned AI.

Patience

Investing in existential risk avoidance requires giving up short-term gains to secure long-term stability; indeed, those now espousing such investments often describe themselves as longtermists.

Researchers characterize the patience of individuals and societies with a range of outcomes. In the economic sense, the rate of time preference or discount factor describe impatience, quantifying the amount of money one would have to receive tomorrow in exchange for giving up a dollar today. Psychologists measure delayed gratification with experiments like the famous marshmallow test.14 Other researchers elicit impulsivity through survey questions like, “I don’t spend enough time thinking over a situation before I act.”15 For simplicity, I refer to outcomes from various studies as patience, capturing different angles of this general concept.

Across countries, income correlates with patience.16 Cash transfers have helped measure patience, since the share of the new income spent vs. saved offers clear exogenous variation. Such designs show that households in rural Mexico and Guatemala are much less (economically) patient than households in the US17

Economic panel data also shows that income and patience correlate within the US.18 This could be reverse causality, as more patient people could take the time to build careers that would generate higher lifetime income, but sociological and psychological research suggests that patience is largely cemented in childhood through cultural and socioeconomic circumstances. For example, residents of poorer neighborhoods have higher impulsivity,19 and income and maternal education at birth negatively correlate with impulsivity among 15-year-olds.20

The question is: is it causal? Recent evidence on “hand to mouth” households—those who consume their entire income—offers conflicting accounts. The hand-to-mouth share generally exceeds the share that standard time preference models would predict. A 2020 paper on US households attributes this to heterogeneous preferences, rather than impatience.21 However, another 2020 paper from Bangladesh finds that large randomized asset transfers enable poor households to break out of consistent hand-to-mouth poverty;22 this would only occur if the wealth shock made them more patient, as some theories predict.23 As with many traits, patience results from more than economic conditions, but poverty reduction would likely have some positive effect on patience.

Trust and global cooperation

Existential risks know no borders. Averting catastrophic climate change will require the US to rejoin the Paris Accords as a vital bare minimum, and other international partnerships will be necessary to hold countries accountable to shared goals. Similarly, international organizations can ensure countries adhere to bioengineering and nuclear engineering safety standards, and can deter great power wars that could make existential risks like pandemic and nuclear war more likely.

Few studies examine sentiment toward international cooperation directly, but income consistently predicts three potential proxies: views on immigration, views on trade, and social trust.

In Australia, income correlates negatively with isolationism and vote share for the anti-immigrant party, controlling for other demographics and attitudes.24 Correlational and experimental evidence from Switzerland finds a “v curve” where anti-immigrant sentiment is highest in low- and high-income groups; it also finds high anti-immigrant sentiment in low-wealth groups (with no v curve).25

A UK survey experiment compared support for a child benefit program when respondents were either primed or not primed to consider that it benefits immigrants. While immigration priming reduced support among all groups, the effect was about three times larger for people without a high school degree than for university degree holders.26

Similar patterns are observed from trade: high income Americans are about 10 percentage points more likely than low-income Americans to say that trade has a “mostly positive” effect on a variety of outcomes.27

Education may be a channel through which income affects international views; for example, a dynamic model of education choice shows that it raises trust (as well as voter participation).28 The US survey also found a 10-point delta in trade sentiment by college completion.

More research is needed to understand these ties; for example, support for the United Nations is not significantly related to support for populist parties in Europe, though US Democrats are more than twice as likely to support the UN than Republicans.29 Overall, though, the available evidence is consistent with the hypothesis that reducing poverty would engender support for the international cooperation needed to fight existential risks.

Climate change

Whether income increases carbon emissions is controversial and uncertain. From a purely correlational perspective, people in richer countries emit more carbon. In 2016 across countries, a 1 percent increase in per-capita income and a 1pp decrease in extreme poverty were associated with increases in per-capita carbon emissions of 1.3 and 1.0 percent, respectively.30

The causal story at the individual level is more encouraging. CCTs in Indonesia reduced tree cover losses by 30 percent, as recipients relied less on deforestation in times of need, and consumed more market-purchased goods rather than deforestation-sourced goods.31 And a UCT in Pakistan shifted its ultra-poor recipients from traditional fuels like wood and dung to more modern fuels that are better for the environment.32

Thanks to advances in clean energy technology, global per-capita emissions have fallen since 2012, and they’ve fallen faster in more advanced countries like the US and France, which is now about equal to the global average.33 It’s plausible then that poor countries would develop in less carbon-intensive ways than rich countries have, bypassing high-carbon technologies no longer needed, and even innovating more themselves.

Regardless, the ethics of slowing global poverty reduction in order to slow climate change are dubious, especially given the infeasibility of such an undertaking and its uncertain impact. What’s needed is public policy to accelerate the transition away from fossil fuels. Experts agree that one policy in particular is essential for averting catastrophic global warming: carbon pricing.

Unlike targeted policies like electric vehicle subsidies, carbon pricing reduces emissions throughout the economy. The state assesses fees on carbon emissions at the source—the oil well, coal mine, gas site, or border for imported goods—and the internalized cost of carbon emissions then flows through manufacturers, services, and consumers, each of whom chooses lower-carbon options, with encouragement from the price signal.

In its 2018 special report on global warming,34 the Intergovernmental Panel on Climate Change (IPCC) made carbon pricing a core benchmark for countries’ progress on climate goals. Simulations from MIT and Climate Interactive show that carbon pricing reduces temperature changes more than any other individual policy; it has a positive marginal effect even at low rates and with or without other policies; and without it, staying under 1.5℃ will be nearly impossible.35

The environmental benefits of a carbon pricing policy would extend beyond the borders of the country that implements it. Domestic manufacturers could export the clean, innovative products promoted by the carbon pricing. And because carbon pricing bills typically come with a “border adjustment,” which equivalizes trading partners by adding a fee to carbon-intensive imports from countries without their own carbon prices, other countries would be incentivized to add their own carbon pricing to make exports competitive.

The question is: how should the revenue be used? The answer, according to over 3,500 US economists, is equal dividends. These “carbon dividends” would offset the higher costs of goods and services with carbon-based inputs.36 Signatories to the letter, the largest statement in the history of the economics profession, include 45 Nobel Prize winning economists, as well as former Treasury secretaries and chairs of the Federal Reserve and Council of Economic Advisors, from both political parties.

Several studies of carbon dividends find that it would be progressive on a net basis and benefit most people.37 This result follows from carbon consumption increasing with income.

65 percent of Americans support carbon dividends,38 following from another popular proposal for universal dividends: the Alaska Permanent Fund Dividend, a small UBI funded by the state’s oil wealth. 90 percent of Alaskans favor the dividend going to everyone, and 64 percent say they would rather raise state income taxes than end the program.39 A clean, habitable environment is a type of shared natural resource, and carbon dividends essentially require that people who consume more of it compensate the rest of society.

Poverty reduction may or may not reduce emissions to avert climate change directly, but poverty reduction policies like cash transfers can make carbon pricing more attractive, raising the odds of enacting effective climate policy.

Pandemics

Ord published The Precipice on March 3, 2020. By the end of that month, the Covid-19 pandemic had shut down much of the planet. Despite being unaware of the virus when writing the book, Ord warned of the risk of natural and engineered pandemics as the second most likely cause of existential catastrophe in the coming century. The combination of historical precedent (the Black Death is estimated to have killed between 30 and 60 percent of Europeans) and rapid investment in synthetic biology indicated that this area deserves caution.

As I write this on September 28, 2020, Covid-19 has just taken its millionth life worldwide.40 Excess mortality estimates suggest official statistics may significantly undercount the virus’s true impact,41 and forecasters expect its death toll to reach 3 million by March 2021.42 It has been one of the worst disasters in human history.

And yet, to wipe out humanity, a future pandemic would have to be orders of magnitude more deadly than Covid-19. It would have to kill over 2,000 times as many people, swinging its scythe at children and younger adults, who have been less vulnerable thus far. It would also have to reach isolated populations, not only to islands like those of Hawaii, whose death rate is projected to be 80 percent lower than that of the US,43 but also to uncontacted tribes and people in other remote locations.

The tools needed to contain such a calamitous pandemic will therefore differ from those deployed for Covid-19. Nevertheless, our current episode may help identify solutions to prepare for worse ones to come.

Coincidentally, the world’s first true UBI experiment sheds light on this topic. In 2017, the cash transfer NGO, GiveDirectly, began an experiment that promised monthly payments of about $22 to each adult in rural Kenyan villages. While many unconditional cash transfer experiments had been previously conducted, none were truly universal—GiveDirectly gave UBIs to all households in treated villages—and none lasted so long—the payments were guaranteed for up to 12 years.

GiveDirectly had planned to release its first results from the UBI study in 2020, and when the pandemic hit, they shifted gears into evaluating how UBI protected its beneficiaries. They found that the transfers “significantly improved well-being on common measures such as hunger, sickness and depression.”44

Of greater relevance to existential risk is GiveDirectly’s finding that the transfers reduced hospital visits and decreased social interactions. In epidemiological parlance, UBI likely reduced “R0” (pronounced “R-naught”), which measures the contagion of a disease. If cash transfers can keep some of the world’s poorest people from taking unnecessary risks, that could mean the difference between humanity’s potential haven remaining populated or becoming exposed.

Other evidence points to poverty as a risk factor for contracting and dying from Covid-19. Compared to counties with under 5 percent poverty, counties in Illinois and New York with poverty rates above 20 percent had 72 percent higher death rates from Covid-19.45 This could be due to job types, general health, and/or other reasons.

Poverty reduction may also improve public health behaviors through education. For example, 85 percent of American college graduates reported wearing masks “always” or “very often” when going outside in summer 2020, compared to 65 percent of non-college graduates.46 The relationship between education and trust may explain this effect, as evidence from Europe during Covid-19 shows that “high-trust regions decrease their mobility related to non-necessary activities significantly more than low-trust regions.”47

Unaligned artificial intelligence

Ord’s top existential risk is that of unaligned artificial intelligence, at about 1 in 10 odds of destroying humanity’s future. This has caused EA organizations to promote AI research organizations as primary donation sites and places to work to make the greatest impact. But what is unaligned AI, and how could it end humanity’s potential?

The canonical thought experiment on the topic dates back to 2003, from Nick Bostrom, a philosophy professor at Oxford and now director of its Future of Humanity Institute:

The risks in developing superintelligence [advanced AI] include…a well-meaning team of programmers [making] a big mistake in designing its goal system. This could result…in a superintelligence whose top goal is the manufacturing of paperclips, with the consequence that it starts transforming first all of earth and then increasing portions of space into paperclip manufacturing facilities.

A real paperclip manufacturer might add constraints to the AI’s optimization function, for example preventing it from killing any humans, or penalizing it for any mountains destroyed. This is similar to how social media recommendation systems work: they optimize for engagement, but also take down content that violates rules, and penalize content that comes close to rule-breaking or otherwise opposes the goals of the company. This can work as long as we humans stay ahead of the AI. But what if the paperclip maximizer AI finds the one way around our constraints and, for example, just pulls minerals from the ocean, killing all fish on Earth? AI technology is progressing quickly, so these possibilities might strike before we know it, before we’re prepared.

Stuart Russell, UC Berkeley computer science professor and director of the Center for Human Compatible AI, lays out a different approach in his 2019 book, Human Compatible.48 Rather than adapting objectives to trim off the scenarios that violate human preferences one by one, he proposes the AI learn human preferences directly via these three principles (verbatim):

The machine’s only objective is to maximize the realization of human preferences.

The machine is initially uncertain about what those preferences are.

The ultimate source of information about human preferences is human behavior.

A paperclip maximizer AI constructed under these principles will either know that emptying the seas violates human preferences (since humans have never attempted such a thing), or would have sufficient uncertainty about human preferences that it would hesitate to do so. It would also need a way to aggregate human preferences, to avoid empowering a selfish or sadistic human.

Whether an AI can be built under Russell’s framework is an engineering question, but taking it as given, poverty may inhibit its ability to maximize the realization of human preferences. Much of AI today is built for commercial ends: Amazon to sell products, Google and Facebook to sell ads, and so on. When certain groups of individuals lack the capacity to participate in the markets—the systems through which AIs are learning to predict human preferences—the AI will have greater uncertainty in estimating its preferences. Uncertainty about those heterogeneous preferences will translate into more uncertain aggregate preferences when considering actions that will affect others.

As long as the AI fully recognizes its uncertainty around poorer people’s preferences, their absence from the commercial systems that train them might not pose an existential threat. But uncertainty is difficult to get right, and without broad input, there’s a risk of recreating humanity disproportionately in the image of its market participants. Equalizing access to those markets by reducing poverty may be a safer bet.

#### Specifically, inequality degrades institutions through populism AND nativism---extinction

Andreas T. Schmidt & Daan Juijn 21, Schmidt, Faculty of Philosophy, Centre for PPE, University of Groningen; Juijn, CE Delft, Delft, the Netherlands, “Economic inequality and the long-term future,” GPI Working Paper No. 4-2021

1. Introduction

After a steady decline until the 1970s, income inequality has been on the rise in nearly all wealthy countries in recent decades. What, if anything, is objectionable about such inequality? Political philosophers here supply us with a wealth of non-instrumental arguments, focusing on questions such as fairness, justice, equality of opportunity, and relational inequality.1 Instead, we here focus on instrumental concerns, zooming in on the external benefits economic equality might produce. For example, one classic instrumental argument is utilitarian: aggregate wellbeing will be higher with less economic inequality, because of the diminishing marginal utility of income.

However, such instrumental arguments typically focus on the static properties of income inequality, that is, on the effects inequality would produce during a somewhat limited time-slice. Yet income (in)equality likely has intertemporal consequences too. And it is far from clear whether such consequences will be good or bad. For instance, Tyler Cowen has recently argued that high economic growth should take priority: with a long enough timeframe, the exponential nature of growth ensures that future benefits will outweigh all other considerations (Cowen 2018). Moreover, if equality lowers longer-term growth rates – as some have argued – the dynamic instrumental case would speak against reducing inequality. In response, one might contest that there is a growthequality trade-off. Or one could argue that equality comes with its own long-term benefits, such as better political institutions.

Such arguments would typically focus on effects within the next hundreds to, maybe, thousands of years. But we could go further and include inequality’s effects on all future well-being. Doing so moves us into the realm of longtermism, an influential idea in the Effective Altruism community. The central idea is that since the future holds the vast majority of potential value, the expected moral value of many actions is almost entirely determined by the action’s effects on the long-term future. Nick Beckstead writes: ‘what matters most (in expectation), is that we do what is best (in expectation) for the general trajectory along which our descendants develop over the coming millions, billions, and trillions of years.’ (Beckstead 2013, 1) Suppose reducing income inequality has non-negligible expected consequences for our far-future descendants. Longtermism would then imply that whether we should reduce economic inequality or not is primarily determined by such long-term effects.

[PARAGRAPH BREAKS PAUSE]

So, we can assess the instrumental character of income inequality in three different ways: we can focus on effects in the short term, the medium term (hundreds to thousands of years), or – adopting longtermism – all its future effects. It is not obvious that these three approaches converge. The lack of work on these questions constitutes a surprisingly large and important gap in the literature. This article makes a start filling this gap. To assess the instrumental benefits of equality/inequality, we use a time-discounted instrumentalist framework. We do not look for an optimal level of inequality. Instead, we consider how, at the margin, reducing or increasing economic inequality in today’s richer countries (roughly, OECD countries) would impact expected aggregate human wellbeing, other things equal. We vary our discount rate to check inequality’s effects along three timeframes, short, medium, and long term. We find a good short and medium-term instrumental case for lower economic inequality. We then argue – somewhat speculatively – that we have instrumental reasons for inequality reduction from a longtermist perspective too, because greater inequality could increase existential risk. We thus have instrumental reasons for reducing inequality, regardless of which time-horizon we take. We then argue that this pro tanto argument has important implications for how philosophers should think about economic inequality. Performing a ‘moral sensitivity analysis’, we argue that for most consequentialist views, the pro tanto argument also provides all-things-considered reason to reduce inequality. And even across most non-consequentialist views, the argument either provides an allthings- considered or at least a weighty pro tanto reason to reduce inequality. Our results matter in several ways. First, most people believe we have duties towards future generations. Accordingly, when assessing policies that affect inequality, their impact on future generations should be a relevant dimension (when assessing proposals to reduce inequality, for example (Atkinson 2015)). Second, our longtermist argument makes for a new input into philosophical debates about equality and egalitarianism. While philosophers often focus on noninstrumental reasons against inequality, they acknowledge that instrumental concerns are important too.2 If longtermism is sound and the long-term future often decisive, our instrumental argument should thus matter greatly for debates around egalitarianism. Moreover, because our argument holds across the short, medium, and long term, it is also quite robust. Finally, in philosophy, there has been increasing interest in longtermism and existential risk but no work yet that connects this to economic inequality. Our article makes a start filling this gap. We proceed as follows. In section 2, we describe our framework. In sections 3 and 4, we respectively analyse the short and medium-term effects of income inequality. In 5 and 6, we analyse the instrumentalist longtermist case for more equality. In 5, we first introduce longtermism and its relation to existential risk. In 6, we present arguments to the effect that higher income inequality can indirectly increase existential risk. In 7, we perform our ‘moral sensitivity analysis’ and conclude in section 8. 2. Framework Do we have instrumental reason to reduce within-country economic inequality when we extend the time horizon from the short to the medium to the long-term future? Our question has three components: (i) our evaluand (‘economic inequality’), (ii) normative framework (‘instrumental reason’) and (iii) time horizon (‘extend the time horizon…’). We now specify all three, starting with (i). First, for tractability, we focus on domestic inequality and largely ignore global inequality. Much policymaking happens at the state level, which offers routes for making domestic equality tractable. Moreover, as we will see, within-country inequalities matter in ways that do not apply to global inequalities. Of course, none of this implies that global inequalities are less important let alone unimportant. Second, for tractability, we mostly focus on inequalities in rich countries, roughly, member states of the OECD. Third, we focus on disposable income inequality (roughly, income after taxes and transfers). We mostly do not discuss other forms of economic inequality, such as consumption or wealth inequality, to make the article tractable and because most empirical research is about income. Fourth, our analysis is broadly within what political philosophers call ‘non-ideal theory’ (Valentini 2012). We consider whether reducing inequality would be instrumentally valuable for typical OECD countries as they are and not for idealised versions of them drastically better along some other dimension. Fifth, we enquire whether, at the margin, richer countries have instrumental reason to prefer more equal distributions, other things being equal. Accordingly, we do not discuss whether countries should be ‘perfectly equal’, what the optimal level of inequality would be, or whether reducing inequality is the most effective way to improve humanity’s long-term wellbeing. Finally, we do not specify how to reduce income inequality. This is a serious limitation, as different measures have different effects. So, our analysis is only ever the first step when discussing measures to reduce inequality. Move on to (ii). We use a framework we call Discounted Instrumentalism. What do we mean by instrumentalism? Our analysis will assess inequality’s effect on subjective wellbeing.4 Again, we focus on wellbeing to keep things manageable. We only briefly touch upon sources of value other than wellbeing. But this does not limit the generality of our conclusions too much. Nearly all axiological theories view wellbeing as one of the central sources of intrinsic value. So, if wellbeing effects are large enough, our instrumental arguments should make for a strong pro tanto instrumental argument across most axiologies. Moreover, out of all candidates for intrinsic axiological value, wellbeing is likely the most widely accepted. But, at any rate, in section 7, we show that including goods other than wellbeing likely reinforces, rather than threatens, our argument. What do we mean by ‘wellbeing’? In the empirical literature, subjective wellbeing is understood either as life satisfaction or experience wellbeing. Measuring life satisfaction, people are asked questions like ‘how satisfied are you with your life on a scale from 1-10?’. Experience wellbeing, in contrast, concerns an agent’s actual, subjective and momentary well-being, such as whether they experience negative or positive emotions (Kahneman and Sugden 2005). We find experience wellbeing the more plausible account of subjective wellbeing, particularly considering it can encompass a broad and rich range of emotions and mental states (Haybron 2008; Schkade and Kahneman 1998). But we leave it open whether subjective wellbeing is life satisfaction or experience wellbeing or both, as our conclusions do not depend on it. Although these two measures can come apart, in the cases we consider they are either sufficiently correlated or differ in ways that do not threaten our conclusions. Finally, consider (iii), our timeframe. What do we mean by Discounted Instrumentalism? Economists typically value goods and services less the further in the future they are consumed. Typically, a discount rate is used to measure how fast the value of consumption declines over time (a higher discount rate implies a faster decline). This devaluation is exponential in time. Sometimes, economists also discount well-being itself. We then speak of a positive rate of pure time preference or a positive rate of impatience. As Christian Gollier notes, there is no agreement among economists on a unique rate of impatience (Gollier 2012, 10–11). Most philosophers, however, argue that the rate of pure time preference should be zero.5 For if we picked a positive rate, even a very low one, the value of wellbeing in the far future would become negligible. For example, with long enough timeframes, it becomes permissible to sacrifice millions of lives in the far future to prevent one headache today. This is not plausible. For our present purposes, however, this ramification of discounting is convenient, as it allows us to operationalise ‘short-term’, ‘medium-term’, and ‘longterm’. To zoom in on the short-term effects of income inequality, we simply select a high rate of pure time preference. For effects on the medium-term future, we pick a small but strictly positive rate. And finally, if we want all well-being to be valued equally, regardless of when it is enjoyed, we use a zero rate of pure time preference. We can now define Discounted Instrumentalism. Applied to a governmental level, we take DI to be: (DI) Out of two policy options, one has strong pro tanto reason to choose the policy that in evidence-relative expectation brings about a higher aggregate discounted experience well-being of all agents living now and in the future.6 DI is about choosing a ‘policy’, which we understand very broadly to include pieces of institutional design, such as setting up an electoral rule, tax code, or a healthcare system. Moreover, DI is comparative rather than maximising.7 This is convenient for our non-ideal and somewhat openended approach: we discuss whether, ceteris paribus, we should reduce inequality. We do not look for the optimal level of inequality let alone optimal policy option. Finally, implicit in DI – again assumed for tractability – is the total view of population ethics, which ranks states of the world based on the aggregate individual value, in this case wellbeing, contained therein. DI is our normative framework for the intertemporal instrumental assessment of inequality. In sections 3-6, we only let the discount rate vary. We choose this framework to ‘operationalise’ instrumental value in a way that is continuous with standard utilitarian approaches in intergenerational economics. But in section 7 we show that our conclusions are robust and important across a much wider range of normative views. 3. Short-term effects We now assess the direct, static effects of income inequality on aggregate well-being. To this end, we pick, somewhat arbitrarily, a high rate of pure time preference. For now, think of an impatience rate of 5%, which maps quite nicely onto the short-term decision making common in politics. Under a discount rate of 5%, one unit of well-being enjoyed 10 years from now will count around 40% less than one unit now. Well-being 50 years from now will still be relevant but will count 12 times less than one unit now. Well-being enjoyed 100 years from now will be almost negligible. So how do income and income inequality affect subjective well-being in the short term? Drawing on recent work in economics and psychology, we can go beyond speculation (Kahneman and Krueger 2006). Most studies here focus on life satisfaction, but we briefly come back to experience wellbeing below. More than 40 years ago, Richard Easterlin observed a strange trend: household income accurately predicts cross-sectional differences in life satisfaction within countries, but average national life satisfaction did not seem to rise when a country grows wealthier over time (Easterlin 1974). Generating much debate, some have tried to explain the so-called Easterlin Paradox. Relative income and social status are a popular explanation for why cross-sectional and intertemporal relationship come apart: we prefer earning more relative to others (Clark, Frijters, and Shields 2008; Ferrer-i- Carbonell 2005). An increase in status will make people happier, but only a rise in relative income will result in a rise in status. As status through relative income is a zero-sum-game, rich countries might not grow much happier on average when they grow economically. Others have challenged Easterlin on the data and argued that there is a logarithmic and statistically significant relationship between life satisfaction and GDP over time (Stevenson and Wolfers 2008; 2013; Sacks, Stevenson, and Wolfers 2012). Easterlin et al. respond that the relationship disappears under long enough time frames: life satisfaction is only correlated with GDP’s shorter-term fluctuations but not its long-term trends (Easterlin et al. 2010; Easterlin 2016).8 Others challenge Easterlin on the reliability of life satisfaction: ‘life satisfaction’ might simply mean something different, when income and quality of life change. With growing income, people also adapt their expectations upwards (Cowen 2018, 19). Such language calibration effects occur in health studies. Angus Deaton, for instance, finds that, proportionally, more Kenyans are satisfied with their health than Americans, even though life expectancy is far higher in the United States (Deaton 2007). Maybe people also calibrate what they mean by ‘life satisfaction’ along with growing living standards. Whatever the correct view on the relation between economic growth and life satisfaction, most authors seem to agree that 1) the cross-person within-country relationship between life satisfaction and income is statistically significant and logarithmic and that 2) the cross-country relationship between life satisfaction and income is statistically significant and logarithmic. As we here consider the short term only, that is enough to support the decreasing marginal utility effect.9 Based on crosssectional data, Stevenson and Wolfers find that a doubling of annual household income only leads to an increase in life satisfaction of around 0.3 points (Stevenson and Wolfers 2013, 14). But this holds for any doubling (up to a potential upper bound): increasing Alice’s income from 10,000 to 20,000 USD is expected to deliver the same increase in life satisfaction as doubling Bob’s income from 80,000 to 160,000 USD. In other words, raising Alice’s income is eight times more efficient than raising Bob’s income. Since the life satisfaction curve with respect to annual household income is concave, aggregate life satisfaction can typically be increased through more equal economic distributions.10 Recall that life satisfaction does not map perfectly onto experience utility. If we are concerned with the latter, a better measure would be experience sampling: asking respondents at random times how happy they feel. A study by Kahneman and Deaton approaches this ideal (Kahneman and Deaton 2010). The authors asked 1,000 participants whether they experienced positive emotions yesterday. The proportion of people that answered affirmatively again increases logarithmically with annual household income. However, it only does so up to an annual household income of about 40,000 USD. Above this threshold, the effect starts to decrease and the graph completely flatlines at 70,000 USD. So, the speed with which marginal utility diminishes is probably higher for experience utility than for life satisfaction. Stevenson and Wolfers seem to support this suspicion, as they report larger coefficients for the relation between income and life satisfaction than for the relation between income and experience wellbeing (Stevenson and Wolfers 2008). Any recommendation to reduce income inequality based on decreasing marginal life satisfaction could hence be conservative. Beyond the marginal utility effect, inequality could affect aggregate short-term well-being through other pathways, such as perceived unfairness. Several recent studies find that developed countries display a negative relationship between domestic income inequality and life satisfaction, after controlling for household income (Blanchflower and Oswald 2003; Ferrer-i-Carbonell and Ramos 2012; Gruen and Klasen 2013). Oishi et al. report a ‘negative link between income inequality and the happiness of lower-income respondents [that] was explained not by lower household income, but by perceived unfairness and lack of trust’ (Oishi, Kesebir, and Diener 2011, 1). In a later paper, Oishi and Kesebir argue that this indirect negative effect of inequality on life satisfaction can even offset positive effects of GDP growth (Oishi and Kesebir 2015, 5).11 We have so far looked for direct evidence on how static inequality affects wellbeing. Alternatively, one could assess how inequality affects other valuable outcomes. For example, research suggests more equal societies have better somatic and mental health, higher levels of trust, better educational outcomes, and less crime (Marmot 2005; Pickett and Wilkinson 2015; Wilkinson and Pickett 2010). Much has been written in social science and epidemiology debating how strong the evidence is and whether correlations might be spurious, due to a confounder or reverse causality.12 We need not settle those disputes here. Plausibly, when we combine all this research, and aggregate our respective credences, we still have reason to believe equality furthers desirable social outcomes. And we can believe so, even if not all causal effects hold up. This has two implications. First, the case for equality’s short-term instrumental value could be made using values other than wellbeing. Second, this research might also indirectly support the conclusion that, in the short term, reducing inequality increases aggregate wellbeing, as goods like health are likely conducive to wellbeing. Overall, reducing inequality is instrumentally valuable in the short term. The rate at which marginal utility diminishes in developed countries is large. So, the positive marginal effects of reducing inequality are likely large too. Relational factors like perceived unfairness and other potential interactions, like health and social trust, further support the short-term instrumental case. 4. Medium-term effects Let us now move on to the intertemporal effects of income inequality up to the medium-term future. In this section, we presuppose a very small but strictly positive rate of pure time preference. For now, think of an impatience rate of around 0.2%. One unit of well-being enjoyed 100 years from now would be worth around 0.82 units today. After 500 years, the value will have decreased by about 63%. Only after about 5000 years, can we ignore most effects. Do we have instrumental reason to support economic equality in the medium term? Consider first, briefly, why we might. First, the short-term case likely extends, in some way, to the medium term. Economic inequality likely creates some path dependence such that inequality now will entrench some inequality in the future. For example, Acemoglu and Robinson argue that economic distributions will also affect distributions of political and de facto legal power which in turn further affect future economic distributions (Acemoglu and Robinson 2008; 2013; Chong and Gradstein 2007). Moreover, high inequality likely reduces egalitarian norms and ideals and can make a society more tolerant of inequality (Birdsall 2001, 25–26). Finally, countries with high inequality typically have lower social mobility leading to an intergenerational transmission of inequality (International Panel on Social Progress 2018, 94–96). Therefore, high inequality today increases the chances of high inequality tomorrow. And, seeing that inequality lowers wellbeing statically, inequality now raises the chances of inequality lowering future wellbeing too. A final argument is that, because inequality lowers short-term wellbeing, we only need to establish that it does not have adverse effects in the medium term. Absent any adverse effects, the shortterm positive effect becomes the tiebreaker. However, there are several potential arguments why inequality reductions could yield negative intertemporal effects, potentially big enough to outweigh short-term gains. We now consider two candidates: inequality’s effect on growth and climate change. (i) Growth In a recent book, Cowen argues that if we seriously value future welfare, high and sustainable economic growth rates should be our main objective (Cowen 2018). Because of the exponential nature of economic growth, small changes in yearly growth rates can cause massive changes in welfare in the long run. For example, ‘had America grown one percentage point less per year between 1870 and 1990, the America of 1990 would be no richer than the Mexico of 1990’ (Cowen 2004, 127–28). Economic growth increases wealth, health, life span, spare time, access to a whole range of technological resources, mobility, level of education, and more (Cowen 2018, 19–33). As we saw above, there is still some discussion whether such benefits translate into increases in subjective well-being. For the sake of argument, assume there is a logarithmic relationship between within-country GDP growth and average life-satisfaction. Suppose for the moment that a doubling in GDP over time results in a 0.1 increase in average well-being measured on a ten-point scale and a country’s growth rate is constant at 3% per year. Under such a growth rate, it takes 235 years for GDP to double ten times, resulting in an increase in average well-being of a full point. After 500 years, GDP has doubled more than 20 times, increasing average well-being by more than 2 points (we should probably abandon the ten-point utility scale by that point). If instead the growth rate were constant at 4% per year, GDP would double ten times fifty years earlier. After 500 years, the difference in average well-being under the two respective growth rates approaches one whole point. If egalitarian policies lower growth, as Cowen argues, there could hence be a strong medium-term instrumental reason against reducing inequality (Cowen 2018). However, it is unclear whether inequality-reduction does in fact reduce growth. Indeed, some mechanisms seem to reduce growth, while others seem to increase it. Consider, briefly, the main mechanisms suggested in the literature.13 More inequality may decrease economic growth: first, stark inequality might reduce institutional quality, for example, by reducing social capital, trust, and investment in public goods and by facilitating elite capture of public institutions (Alesina and Perotti 1996; Alesina and La Ferrara 2002; Bavel 2016; Birdsall 2001; Chong and Gradstein 2007; Glaeser, Scheinkman, and Shleifer 2003; Keefer and Knack 2002). Second, inequality might lead to underinvestment in human capital, especially among poor citizens (Birdsall 2001; Ghatak and Nien-Huei Jiang 2002). Finally, inequality might reduce the size of the middle class, which could lead to insufficient domestic demand (Foellmi and Zweimüller 2006; Galor and Moav 2004; Murphy, Shleifer, and Vishny 1989; Zweimüller 2000). Conversely, some hypothesise that more inequality may increase economic growth by incentivising citizens to work hard, take risks and invest in their future (Li and Zou 1998; Kornai 1992) and by leading to less income being spent on consumption, thereby increasing aggregate savings and investment (Kaldor 1955). How should we assess those suggested effects? One option would be to probe them all in detail. However, given space constraints, we instead survey attempts to determine their aggregate effect directly. Frederico Cingano provides an extensive literature review (Cingano 2014). Unfortunately, Cingano finds no consensus. Between 1994 and 2014, studies that find positive relationships between growth and inequality are about as prevalent as studies that find negative relationships. To make things more complicated, the Deininger and Squire dataset most often used in this period may be unreliable and inconsistent, and inequality data from different countries is often incomparable (Atkinson and Brandolini 2001). Several studies might also suffer from endogeneity problems. Statistical methods usually cannot fully account for the potential of reverse causality and omitted variables. Perhaps the most promising study to date has been conducted on behalf of the OECD by Cingano (Cingano 2014). It only includes OECD countries, which is fitting for our current purposes. Cingano also uses particularly good and comparable panel data. The OECD dataset further enables the use of multiple different inequality indicators, whereas other studies must rely on a single indicator. Cingano finds that income inequality has a sizeable negative effect on economic growth in OECD countries. A 1-point reduction in Gini coefficient is associated with an increase in yearly GDP growth of around 0.15%. This effect seems to be linear. As Cingano writes: ‘in practice, no […] non-linearity was found – the effect on growth of an increase in inequality from 20 to 21 Gini points was found to be the same as the effect of increasing the Gini from 40 to 41’ (Cingano 2014, 19). The data also suggest that the gap between low-income households and the rest of the population is of key importance. Strikingly, low-income households are defined here as those in the bottom 40% of the income distribution. Inequality caused by the very rich getting even richer is not found to hamper growth. These results suggest that solely focusing on alleviating poverty or lowering the incomes of the very rich is suboptimal. Instead, growth can be increased by addressing low incomes more broadly. Given the existence of contradicting studies, we should take Cingano’s conclusions with a grain of salt (see (International Panel on Social Progress 2018, 98)). Yet we conclude that it is rational to assign a higher credence to believing income inequality reduces growth in developed countries than that it boosts it. (ii) Climate change The critical reader might point out that Cowen’s argument in favour of growth is based on sustainable growth. If combating inequality leads to higher growth rates, and if growth increases greenhouse gas (GHG) emissions, more equality might increase GHG emissions and thereby decrease future wellbeing. After all, ramifications of current climate change are already expected to seriously harm aggregate well-being. Many studies indeed find a positive relationship between GDP and carbon emissions, although the estimated effect sizes tend to be bigger for developing countries than for rich nations (Acaravci and Ozturk 2010; Holtz-Eakin and Selden 1992; Ramanathan 2006). Unfortunately, these studies do not control for inequality. Furthermore, since aims to reduce emissions have been widely embraced by developed nations, we cannot simply extrapolate previous findings. It is hence difficult to draw immediate conclusions from the apparent link between GDP and a country’s carbon footprint. We can, however, investigate the direct relationship between domestic income inequality and a country’s carbon emissions after controlling for GDP. A few early studies have found a negative relationship between income inequality and national carbon emissions (Heerink, Mulatu, and Bulte 2001; Ravallion, Heil, and Jalan 2000). Later research showed a nonsignificant relationship instead (Gassebner, Lamla, and Sturm 2011). Recently, larger datasets have become available and an early consensus has emerged. In the last decades, the association between income inequality and carbon emissions in high-income countries has shifted from negative to positive, suggesting that in recent years, more income inequality increases carbon emissions. In lowerincome nations, however, the relationship has stayed negative (Grunewald et al. 2012; Jorgenson et al. 2015; 2016). Grunewald et al. provide an explanation of the negative effect found in low-income countries (Grunewald et al. 2012). In low-income countries, many poor citizens effectively live outside the carbon economy. If inequality in such countries decreases, previously poor citizens become richer and start to emit carbon (for instance, they might buy their first car). In rich countries, most citizens are part of the carbon economy already. So, this negative contribution is not observed. Conversely, multiple pathways could explain the positive effect recently found in wealthy nations. First, high inequality may encourage conspicuous consumption as the fight for material status increases. Moreover, average working hours tend to increase as inequality rises (Bowles and Park 2005). In addition, longer working hours might be associated with a larger carbon footprint (Fitzgerald, Jorgenson, and Clark 2015; Knight, Rosa, and Schor 2013). Second, income inequality may also increase a nation’s carbon emissions by eroding social trust. In unequal countries, citizens might be less tempted to start pro-environmental social movements or promote socially responsible behaviour (Cushing et al. 2015). Third, concentration of economic power and, with it, political power can prevent pro-environmental action and regulation (Knight, Schor, and Jorgenson 2017). Which pathway is most influential, and which one holds up empirically, does not matter much here. For empirical data and theory seem to point in the same direction: improving conditions for the bottom 40% of households might boost growth more sustainably than relying on other pro-growth mechanisms. So, if anything, a concern around climate change also supports economic equality. Overall, we likely have medium-term instrumental reason to reduce inequality in developed countries. Inequality today is likely to cause inequalities in the future, which in turn lowers expected future wellbeing. Moreover, inequality likely increases GHG emissions and is somewhat likely to lower medium-term growth rates.

[PARAGRAPH BREAKS RESUME]

5. Longtermism and existential risk

We now move on to assess the effects income inequality might have on aggregate well-being in the very long term. To do so, we presuppose a zero discount rate: we assign equal value to all wellbeing regardless of when it is experienced. However, before we do the analysis, a short philosophical intermezzo is in order.

First, as mentioned above, longtermism has recently emerged as a research programme on future generations (Beckstead 2013; Bostrom 2003; Greaves and MacAskill 2019; Greaves, Mogensen, and MacAskill 2019; Ord 2020). The first longtermist claim is that, in expectation, most ethical value lies in the long-term future, where this encompasses the entire future of human-originating civilisation, including millions or even billions of years from now. Across the entire future of humanity, future people could outnumber today’s people by many orders of magnitude. The second claim is that some of our actions affect the expected value of the long-term future. Accordingly, the ethical value of those actions will then primarily be determined by their expected long-term future effects. In our case, longtermism would imply that if we find that equality has such long-term effects in expectation, those could trump the short-term considerations that are more commonly the subject of discussions around inequality.

Now, an obvious worry about longtermism is epistemic: can we ever make any meaningful predictions about effects into the very long-term future? The worry is not that we do not impact the long-term future but that we cannot rationally predict how.14 Longtermists respond by shifting the focus towards identifying whether we can affect the probabilities of humanity changing towards a different long-term trajectory. Long-term trajectories are paths human civilization takes into the longterm future (Baum et al. 2019). On status quo trajectories, ‘human civilization persists in a state broadly similar to its current state into the distant future (Baum et al. 2019, 54)’. On catastrophe trajectories, humanity either disappears completely or gets stuck in a civilizational state of much lower value than the status quo or alternative feasible trajectories. Finally, in high-value trajectories humanity achieves aggregate wellbeing far exceeding current levels. For example, humanity might benefit from technological progress or successfully expand into space and vastly increase the number of happy people. In a longtermist analysis, we thus need to see whether policies would affect the probabilities of long-term trajectory change. And it seems plausible that some actions do. Actions that increase or decrease existential risk are the most obvious example. An existential risk is a risk that threatens the premature extinction of Earth-originating intelligent life or the permanent and drastic destruction of its potential for desirable future development (Bostrom 2002; 2003). When devising a nuclear defence strategy, for example, it would be irrational to ignore its potential impact on existential risk. Baum et al. mention further candidate actions such as ‘reducing the risk of major catastrophes that would lead to the permanent loss of advanced human civilization’ or ‘expediting space colonization and ensuring that it would improve welfare…’ (Baum et al. 2019, 57).

In our analysis, we mostly focus on inequality’s effect on existential risk. To some, such a focus might seem esoteric or unusually gloomy. But, from a longtermist perspective, extinction is supremely bad in expectation, as it would destroy a potentially very long and valuable future.15 Bostrom argues that reducing existential risks has higher expected moral value than any other possible action or policy under a zero discount rate (Bostrom 2013). Moreover, while of course highly uncertain, expert analysis and informal polls among experts suggest an existential catastrophe might be higher than commonly believed, with estimates of 10-20% by the end of the century not being uncommon (Ord 2020; Sandberg and Bostrom 2008).16 Moreover, the bulk of such percentages stem from human-induced existential risks such as nuclear war, malfunctioning nanotechnology, bio-engineered pandemics, and misaligned artificial intelligence. This being so, it seems likely we can affect these probabilities by a non-negligible amount.

So, a longtermist analysis of inequality will get off the ground, if we find considerations why inequality could affect long-term trajectory-change, particularly by affecting existential risk. Of course, such considerations will be far more speculative than is common in academic research. Methodologically, our assessment of the evidence is broadly ‘Bayesian’ in spirit. One way to proceed would be to include only the most rigorous studies with highly reliable results and exclude all others. However, for longtermist assessments we cannot afford this luxury. Research that empirically tests human extinction is unlikely to get ethics approval. Yet the paucity of rigorous evidence and our epistemic uncertainty does not justify ignoring the long-term future. Rather, we include empirical considerations even when our credence in them should be low (and maybe imprecise). However, when analysed, and when we aggregate our credences (informally), such considerations still justify updating our credence on whether less inequality is more likely to have good or bad long-term effects.

6. Long-term effects

To assess the long-term effects of domestic income inequality in developed countries, we assume a zero discount rate. Our contention is that inequality reduction is more likely to decrease rather than increase existential risk. Our somewhat preliminary conclusion is thus that longtermists should favour inequality reduction.

We discuss several reasons for why inequality might have negative effects and one reason why it might have positive effects. The negative effects we discuss are climate change, the effect of inequality on public institutions, conflict and polarisation, and differential progress. The potential positive effect we discuss is that if inequality lowers growth rates, and if growth increases existential risk, then inequality could lower existential risk.

(i) Climate change

As we learned in Section 3, inequality increases a wealthy country’s carbon footprint. This is a problem.

First, climate change itself is an existential risk, particularly given uncertainty around its tail-end risks (Ord 2020, chaps. 4; 6). (Although, it is likely not the greatest existential risk (Ord 2020, chap. 5).)

Second, climate change is likely what Ord calls a ‘risk factor’: increasing or reducing climate change will likely affect the total existential risk, even beyond the probability that climate change itself will cause an existential catastrophe (Ord 2020, 152). For example, increasing temperatures and more extreme weather imply that the fight for scarce resources such as sweet water will increase over the next decades (“Global Peace Index 2019: Measuring Peace in a Complex World” 2019). Furthermore, deteriorating living conditions might lead to climate refugees who, in part, will flee to developed countries, which could lead to institutional destabilisation and conflict.

Finally, beyond extinction risk, climate change could put us on a suboptimal (non-extinction) trajectory: run-away climate change, for example, might put us on a path we cannot easily leave and which necessitates continuous costly adjustments, such as adapting to repeated flooding and adjusting agriculture to extreme weather irregularities. When aggregating those negative effects across time, those might add up to significant long-term costs.

(ii) Institutional quality and conflict

It is often argued that a country’s long-term performance depends to a significant extent on the quality of its institutions, including its political and legal institutions (Acemoglu, Johnson, and Robinson 2005). Economic research mostly focuses on explaining long-term differences in growth rates. As seen above, some researchers argue that high inequality will reduce growth rates, among other things, because it can worsen institutional quality. However, besides facilitating economic growth, public institutions have other functions that matter from a long-term perspective. For example, disaster preparedness, education, public health, foreign policy, science policy, and many other areas could influence long-term trajectories. If such things go badly, they could increase existential risk. Conversely, good institutions will help reduce existential risk. For many existential risk reduction strategies likely require public goods and collective action, which in turn require good public institutions (among other reasons, because some such public goods are unlikely to be provided by markets). So, it seems reasonable to assume that, with most other societal goals, good institutions can help deliver existential risk reduction. Here is a cheesy analogy: targeted actions like washing your hands regularly or getting a flu shot can reduce your risk of dying from an infection. But you will also do well investing in a strong immune system, as that is an ‘all-purpose goods’ in lowering your risk of dying from any bacterium or virus. Investing in good institutions might similarly be an all-purpose-good: rather than tackling individual sources of existential risk directly, we improve conditions for tackling whatever existential risks may come our way.

There are at least two reasons why higher inequality could decrease institutional capacities for longtermist public goods.

First, there is some direct evidence that, whatever the causal pathway, inequality reduces institutional quality (which in turn typically leads to more inequality) (Chong and Gradstein 2007; Savoia, Easaw, and McKay 2010).

Second, high inequality can lead to elite capture. Empirical work on studying political and de facto legal power is difficult, yet there is a growing consensus that high levels of inequality can lead to elite capture and thereby reduce the long-term quality of legal and political institutions (Acemoglu and Robinson 2008; 2013; Bartels 2018; Bavel 2016; Chong and Gradstein 2007; Cummins and Rodriguez 2010; Savoia, Easaw, and McKay 2010). Further, if institutions are disproportionately geared towards elite interests, then they might be less likely to be geared towards positive longterm trajectories. We might see more rent-seeking and less investment in public goods. Moreover, if elite capture is strong enough, such capture, and the potential inequality that comes with it, can intensify going forward (Chong and Gradstein 2007).

Now, one might object and wonder whether elite interests and longtermist interests will necessarily be misaligned. Could an enlightened elite not even be more longtermist than a more democratic system? Here are two potential arguments. First, wealthy donors fund a significant part of research and direct action on existential risk and longtermism (the Open Philanthropy Project, for example). Indirectly, inequality might thus reduce existential risk through such funding. Second, rich people might have a lower rate of pure time preference than less well-off people, which would make them more naturally aligned with investing in long-term causes.

In response to the first argument, remember we here focus on income inequality reductions. Private funding only requires ‘enough’ wealth inequality going forward, it need not require elite capture. And reducing income inequality is unlikely to eradicate the required wealth inequality and the existence of big donors. In response to the second argument, we are somewhat sceptical that elite capture would translate a lower impatience rate into longtermist strategies in policy. A successful transmission would require influence to be systematic and well-coordinated across time and, probably, across different elite actors. Yet lobbying and elite influence must often capitalise on shorter windows of opportunities, which makes well-coordinated intertemporal, and positive longtermist, policy capture less likely.

Of course, such considerations are speculative. But, in any case, we think that, on balance, there are stronger reasons to believe elite capture would increase – rather than decrease – existential risk. First, elite capture often comes with rent seeking, which lowers institutional quality (Chong and Gradstein 2007). Second, industries like oil, gas, weapons and others are often concentrated and well organised in exerting influence in law and legislation. Their interests and influence overall are likely to be more short-term than longtermist. Third, recent decades have seen a shift towards a stronger shareholder value orientation in corporate governance. A common criticism of this shift is that it incentivises more short-term decisions. Accordingly, corporate influence into public institutions will likely display short-termist bias too. Finally, we can of course imagine that ‘prolongtermist elite capture’ could happen and gamble on that possibility. However, if strong democratic and legal oversight and the power to check elite influence is lost, we might struggle to reverse our gamble.

Second, high inequality is likely to reduce social capital and trust (Alesina and La Ferrara 2002; Knack and Keefer 1997; Rothstein and Uslaner 2005). Social capital and trust in public institutions in turn are important for effective public goods provision (Knack and Keefer 1997; Beugelsdijk, Groot, and Schaik 2004). Effective public goods provision, in turn, is important for (some) effective measures to reduce existential risk (and, more generally, to coordinate towards more valuable long-term trajectories). Therefore, high inequality could reduce societies’ capacities to effectively respond to large-scale challenges like existential risk.

Finally, some limited direct evidence suggests societies with higher social capital and lower inequality exhibit better preventive and adaptive outcomes for environmental risks and can show greater resilience to external shocks (Bavel and Curtis 2019; Kahn 2005). For example, Matthew Kahn provides some evidence that more equal countries, when controlled for GDP, have significantly lower death rates in natural catastrophes (Kahn 2005). While smaller natural catastrophes are different from global catastrophic risk scenarios, resilience in such events might be somewhat indicative of societies’ resilience to catastrophic risks.

So, good social and institutional conditions could help reduce existential risk. Consider next how, conversely, bad conditions might increase existential risk. A key driver of existential risk is conflict, both between and within nation-states (or what (Ord 2020, 175–79) calls a ‘risk factor’). Conflicts and arms races raise human-induced existential risks such as nuclear war, the outbreak of a bioengineered virus or the launch of misaligned artificial intelligence. Note that an existential catastrophe could be set in motion either purposefully or accidentally. Both are more likely during conflict. Nuclear warheads, cyberweapons, and bioweapons could all be used purposefully to attack enemy states, leading to potential global escalation. But as past nuclear incidents and close calls during the Cold War show, arms races also increase the probability of accidental catastrophes (Schlosser 2013).

Esteban and Schneider find that formal and empirical evidence suggests that political and social polarization increases the risk of violent conflict, both intra-nationally and internationally (Esteban and Schneider 2008). If income inequality increases polarization, inequality may indirectly drive existential risk. Indeed, recent evidence suggests that income inequality can increase the degree of polarization between groups of citizens. Bonica et al. find that the degree of polarization within the US House of Representatives, for example, is accurately tracked by domestic income inequality, with correlation coefficients rising up to 0.95 depending on the chosen time-period (Bonica et al. 2013, 105–8). Of course, correlation does not imply causation and the correlation is likely at least partially the result of reverse causation or a confounding variable. That said, we should assign a non-negligible credence to inequality partially causing polarization. Moreover, inequality and polarisation might also play some role in getting polarising and populist candidates elected (Piketty 2018). In a preliminary analysis of US election data, Darvas and Efstathiou find that more unequal states were more likely to vote for Donald Trump, after controlling for variables such as income, race and education (Darvas and Efstathiou 2016). Populist politicians – like Trump, Bolsonaro and others – are likely bad news for existential risk reduction. They are less cooperative in delivering regional and global public goods and typically prefer riskier, and more conflictual and nationalistic policy styles.

(iii) Differential progress

We have surveyed some reasons why inequality might translate into worse institutional conditions for longtermism. Beyond more formal institutions and avenues for collective action, we might also consider the cultural, moral and informal social norms that could potentially impact existential risk.

The simple idea is that countries that sustain low levels of inequality will foster – and require for their support – a public moral culture that values solidarity and cooperation. More egalitarian policies might in turn move citizens and leaders towards more altruism and stronger regard to moral and social considerations in decision processes. Societies that actively work against income inequality may thereby reinforce broadly ‘pro-social’ social norms. Arguably, more egalitarian attitudes and norms might support public goods provision and favour expanding one’s moral circle to other countries and future generations. Countries with high levels of inequality, in contrast, might reinforce norms of competition, individualism, and personal responsibility. Policies that encourage competition and smaller moral circles also seem more likely to attract leaders that value individualism and competition. Indeed, as Wilkinson and Pickett note, more equal societies give more in development aid and score better on the Global Peace Index (Wilkinson and Pickett 2010, 227). Again, we may wonder whether these relationships are not partially explained by confounding variables or reverse causality. That said, the causal link through social norms and public morality has some intuitive force. If true – and drawing on what we said above – a public commitment to equality might support a public moral culture that values solidarity and cooperation, which could help reduce existential risk.17

A related idea is that egalitarian societies might provide better conditions for differential progress (Tomasik 2015). The thought is that new technologies often pose a risk when they become available before society has developed the collective ‘wisdom’ to use them well. Technology should not develop too fast relative to progress in wisdom. Consider artificial intelligence for example. Bostrom argues that once artificial intelligences (AI’s) outsmart humans in AI-creation, systems might iteratively improve themselves and potentially set in motion an intelligence explosion (Bostrom 2014). Quite quickly, it might become difficult to control AI and align it with our interest. Such a scenario, if it happens, is still some time away. However, if we do not develop collective wisdom first, it might be too late by the time superintelligent AI arrives on the scene. Similarly, we are probably still many scientific breakthroughs away from bio-printing engineered viruses or creating nanotechnology with catastrophic potential. Still, differential progress mandates that we set up institutions that ensure terrorists cannot bio-print the next Spanish flu before breakthroughs in genetics and engineering technically enable them to do so.

But what goes into the wisdom side of differential progress? Minimally, it requires effective institutions, values, and empirical insight and understanding. We have argued that equality might help strengthen the public institutions required for effective collective action to reduce existential risks. But society and the institutions governing it might also require public commitment to values conducive to longtermism. A commitment to equality and cooperation, and the norms required to sustain such a commitment, might help. Together then, equality could improve differential progress.18

(iv) Growth

As we concluded in Section 3, it seems slightly more probable that equality boosts rather than hinders economic growth in developed countries. But what if economic growth increases existential risk? Indirectly, equality would then increase existential risk too.

So, does economic growth increase or reduce existential risk? Theorists have advanced opposing views on this. On the one hand, faster economic growth speeds up technological progress, which gives us less time to work on their safety and can increase existential risk (Yudkowsky 2013). Moreover, spill-over growth from developed countries can increase the number of nations with access to destructive technology. For example, as developing countries grow economically, they might increasingly afford nuclear technology. On the other hand, growth could also speed up the progress required to effectively manage existential risk. For example, very poor countries are less likely to fund innovative green technology or develop a vaccine during a global pandemic. Moreover, overall existential risk might drop dramatically once humanity becomes an interplanetary species (things would have to go wrong on two or more planets almost simultaneously in such a scenario, also see (Ord 2020, 194)). Under higher growth rates, we might reach the ‘safe’ interplanetary state earlier, with less time overall for things to go wrong under a high-growth trajectory. And even in the here and now, as Kahn finds, richer countries are more resilient to shocks and have far fewer deaths in natural catastrophes (Kahn 2005). Finally, growth could strengthen cooperation by creating opportunities and incentives for positive-sum cooperation. Under stagnation, in contrast, selfinterested behavior primarily takes the form of zero-sum competition (Tomasik 2015). Such zerosum competition, in turn, increases the risk of conflict.19

What are we to make of this discussion? Overall, our impression is that most longtermists are somewhat favourable of economic growth. At the same time, it is difficult to tell which of the above arguments should receive which weight. One reason is that economic growth rates do not go hand in hand with the rates of dangerous technological growth. Imagine, for instance, a Cold War-like scenario between the United States and China. Such an arms race would probably slow down economic growth as both countries lose major trade partners but nevertheless speed up development of state-funded destructive technology. Economic growth is a rather coarse-grained variable. Relatedly, the relevant counterfactual for us would also be: what kind of economic growth would we have under conditions of stark inequality? There is some chance that, even if the rate would be lower, growth would have different characteristics. For example, if societies are less cooperative and emit more greenhouse gases, they might have a less desirable type of economic growth. Alas, these questions are beyond our current scope. Further research into economic growth and longtermism, including the more specific interactions suggested, are clearly valuable.

Let us take stock. In our long-term analysis, several mechanisms suggested equality could reduce existential risk while only one mechanism was uncertain. It hence seems rational to assign lower subjective probabilities to existential catastrophe conditional on lower levels of inequality. Thus, given our current evidence, longtermists should support inequality reduction.

7. What follows?

We have argued that, no matter the time horizon, we have instrumental reason to reduce withincountry economic inequality (at current margins). What follows from this argument for what we ought to do all things considered?20

First, if you are a utilitarian, our argument shows that you ought to prefer more equality all things considered. Using a comparative and scalar notion, we can define utilitarianism as:

Discounted Utilitarianism: Out of two policy options, one ought to choose the policy that in evidence-relative expectation brings about a higher aggregate discounted experience wellbeing of all agents living now and in the future.

For utilitarians, the pro-equality argument thus is not just pro tanto but all-things-considered and it robustly holds across a short, medium and long-term time horizon.

But what do our arguments imply for theories other than utilitarianism? We now suggest that on most theories, our pro tanto argument either supplies an all-things-considered argument or, at least, a weighty pro tanto argument. To do so, we survey the ways in which someone can diverge from utilitarianism and whether that would challenge our argument. (Given space constraints, we cannot discuss all such theories in detail.) We will show that our pro tanto argument has important implications for how philosophers – of all or at least most stripes – should think about economic inequality.

(i) Distributive concerns

Some reject utilitarianism, because they care not only about aggregate wellbeing but also about its distribution. For example, telic distributive egalitarianism holds that, other things equal, distributive inequality between persons is intrinsically bad (Parfit 1997; Temkin 1993).21

How far distributive egalitarianism affects our arguments depends on its scope. If we think only within-country inequalities are intrinsically bad, or if those are disproportionally bad, then distributive egalitarianism would strengthen our conclusion: we would then have instrumental and intrinsic reasons to reduce inequality.

However, if egalitarian theories have a global scope, such that global inequality is just as intrinsically bad as within-country inequality, then they do not so obviously support our conclusions. Reducing within-country inequality can help reduce global inequality. But there often are other ways to reduce global inequality. And some measures might reduce global inequality yet increase domestic inequality (low-skilled migration can have that effect, for example). An additional question is whether distributive egalitarianism should extend to inequalities across generations. Again, this would complicate the picture. So, what follows from distributive egalitarianism across space and time is far from clear.

In any case, all distributive egalitarians we know are also pluralists in that they hold that distributive equality is only valuable pro tanto. Besides equality, it also matters how much wellbeing there is. If the marginal effects on aggregate wellbeing are large enough, pluralist egalitarians typically think they should carry the day. Given the potentially big marginal effects, particularly in the long term, pluralist distributive egalitarianism is thus unlikely to challenge the all-things-considered argument in favour of equality.22

(ii) Non-Welfarism

Some reject utilitarianism, because they reject a purely welfarist axiology (Sumner 1996, chap. 7). Under such theories, the goodness of outcomes also depends on values other than well-being. Common candidates include health, beauty, knowledge, achievement, freedom, human excellence, autonomy, and biodiversity.23 Given space constraints, we cannot discuss all such proposals. But the following considerations at least suggest that the most common non-welfarist proposals are unlikely to threaten our all-things-considered argument.

First, such non-welfarist goods could challenge our argument, if they correlated negatively with equality. We are not aware of any arguments or evidence to this effect. If anything, several such goods correlate positively with equality. For example, equality in OECD countries correlates with good somatic and mental health, good educational outcomes, trust, and lower greenhouse gas emissions (Wilkinson and Pickett 2010).24

Second, such non-welfarist goods could challenge our argument, if they pulled in a very different direction than wellbeing. While this may sometimes happen for individuals, we are not aware of population-level evidence to this effect. If anything, several such goods correlate positively with aggregate wellbeing. For example, wellbeing seems positively correlated with freedom (Bavetta et al. 2014; Inglehart et al. 2008), democracy (Orviska, Caplanova, and Hudson 2014; Owen, Videras, and Willemsen 2008), and with somatic and mental health (Deaton 2007; Kahneman and Deaton 2010).

Finally, and most importantly, our longtermist arguments were mostly that equality could help reduce existential risk. Even non-welfarists care about existential risk, as extinction would trivially preclude non-welfare human goods to be preserved and promoted in the future.25

Those reasons suggest that most non-welfarist axiologies are unlikely to challenge our all-things-considered argument.

(iii) Population ethics

Some people reject the total view in population ethics, that is, the view that we should rank outcomes based on how much aggregate personal goodness they contain. Some people could adopt views which would seem to threaten the longtermist case – average or person-affecting views, for example. Such views might then also challenge our longtermist argument for economic equality. But it is not clear how strong the challenge is (Ord 2020, 259–61).

First, even for average views, longtermist conclusions can be established (Greaves and MacAskill 2019).

Second, any rational agent who dismisses the total view should nevertheless assign a small credence to the total view being true anyway, particularly considering all other views have severe problems. On an expected moral value calculation, the vast number of potential human descendants will then render the total view overwhelmingly important, even if it receives a low probability-mass. Indeed, Greaves and Ord conclude that under moral uncertainty over the correct population axiology, the total view becomes the dominant player (Greaves and Ord 2017).

Of course, population ethics is complex, and much more could be said on this. But the point stands that, considering moral uncertainty, rational consequentialists who reject the total view should nevertheless favour inequality reduction based on longtermist considerations.

(iv) Non-consequentialism

Many reject not only utilitarianism but all forms of consequentialism: accordingly, considerations other than consequences – such as rights, motives, virtues, and duties – (also) determine whether an act is right or wrong.

To turn our pro tanto argument into an all-things-considered argument, we could draw on the High Stakes Argument: most non-consequentialist views typically hold that we do have a pro tanto moral duty to promote the good even though such a duty is also subject to constraints (rights for example). Such theories can still give you an all-things-considered duty to promote the good, either when promoting the good does not violate any constraints or when the marginal good you can do is large enough to override those constraints. Arguably, this applies to our argument, particularly to our longtermist argument: when we can impact the long-term future in expectation, the stakes are very high, given the long-term future’s expected value (Greaves and MacAskill 2019).26

Of course, we are here more concerned with governmental policy and institutions rather than individual action. Some theorists argue that when moving from ethics towards political philosophy, consequentialism becomes more plausible or even ‘inescapable’ (Goodin 1995; Pettit 2012). But most political theorists probably think political institutions come with their own nonconsequentialist requirements, such as legitimacy, fairness, non-domination, justice, or rights. Many of those will reinforce our pro-equality argument. Relational egalitarians, for example, argue that stark domestic economic inequality often contributes to domination, oppression, and other inegalitarian relationships.27 Moreover, stark domestic inequalities could undermine fairness and equality of opportunity (Rawls 1971; Roemer 2000), democratic equality (Bartels 2018; Scanlon 2018), or undermine freedom as non-domination (Pettit 2014). Many non-consequentialist views in political philosophy would thus strengthen our all-things-considered conclusion.

Other views, however, such as Nozick-style libertarianism, might challenge them.28 (Although, even for Nozick this is unclear, because he sets aside the question of whether side constraints could be overridden to ‘avoid catastrophic moral horror’ (Nozick 1974, 29 footnote)). Surveying all nonconsequentialist views in political philosophy unfortunately is beyond our current scope. But, again, we think it reasonable to assume that even anti-egalitarian views should hold that states and societies have a pro tanto duty to promote the good or at least protect humanity’s long-term survival. If so, our longtermist argument for reducing economic inequality will at least provide a weighty pro tanto argument.

8. Conclusions

Instrumental arguments against economic inequality often neglect the intertemporal consequences of inequality. This constitutes a large and important gap in the literature, both in philosophy and economics. In this article, we have assessed the instrumental case against income inequality across three different time-horizons. The instrumental case for equality in the short term is strong. The case for inequality-reduction is epistemically slightly weaker for the medium term but nevertheless persistent. Finally, inequality reduction also seems supported from a longtermist perspective: mediated by climate change, lower institutional quality, polarization and conflict, and lower differential progress, income inequality might increase existential risk. Therefore, we conclude, somewhat tentatively, that we have instrumental reason to favour income inequality reduction, regardless of our preferred time-horizon. Moreover, our instrumental case should weigh heavily. We argued that on most normative views in philosophy – including non-consequentialist views – our instrumental case either gives us an all-things-considered or, at least, a weighty pro tanto reason to prefer lower inequality.

#### Local community planning would relocalize production. This enables global systemic robustness and redundancy.

Brandon J. Unti 20, Economics Instructor, Bellevue College, “Money, Work, and Mass Extinction: Transformational Degrowth and the Job Guarantee,” University of Missouri - Kansas City, 2020, ProQuest

Re-Localize

The localization of the economy serves the aims of DG on a number of fronts. By fostering face-to-face relationships, community, trust, cooperation, and relations of reciprocity, re-localizing economic activity helps reverse the damage done to the social fabric by the logic and values of global capital. Reducing the social and spatial distance between those interacting in relations of production and consumption serves to humanize the economy. When producers know the consumers of their products, they experience a sense of accountability. Similarly, when consumers live in proximity with producers and production, they develop an understanding of methods, environmental impacts, working conditions, etc. This means that consumers will be better situated to make informed choices, in turn, pressuring producers to comply with community standards. Perhaps the most obvious advantage of localizing production and consumption is the massive reduction of energy use and emissions associated with reduced transport.

A JG can and should be used to re-localize the economy. Administered at a community level the JG will focus on employing members of the community in ways that serve the community. This means local work, reduced commutes, and reduced energy consumption in the transportation of goods and services. As an example, the JG might undertake local food production via community farms and gardens. This will provide meaningful work, healthy food, and curtail energy use in terms of transport, processing, and refrigeration.

Another example might be JG public arts and entertainment via music, poetry readings, dance, and theater. Here again the JG fulfills multiple functions, providing meaningful-enjoyable work, fostering community, and creating opportunities for public consumption to replace high throughput private consumption. For instance, rather than everyone purchasing a television to plug-in and watch at home, community members can walk to the local theater. It should be noted that this kind of public consumption is likely harmful to the health of a capitalist economy via its impacts on aggregate demand, profits, and employment. Given capitalism, it is desirable that everyone purchases a television (and better yet a new model each year) because it helps to fuel sales and jobs. Thus, public consumption poses a threat to employment. In this case, that threat is pre-empted by a JG.

#### The alternative is global collapse from cascading shock contagion---it’s certain AND existential.

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1.1Introduction

There is a specter haunting globalization and modern life: The potential for widespread civilizational collapse. Stories of dystopian fiction and apocalyptic futures have never been more popular, with audiences flocking to big-budget disaster movies (Roberts 2020). Our world is existentially anxious because we sense that our trajectory is not sustainable (Ord 2020). Even the most optimistic possibilities of scientific and technological progress cannot guarantee our collective ongoing stability and prosperity. Global systemic shocks like 9/11, the Global Financial Crisis, COVID-19, and the Russian invasion of Ukraine, together with increased actual or threatened aggression from other global actors, have heightened awareness of the fragility of our increas-ingly globalized and interdependent way of living. Such developments have brought the magnitude of these fragilities into sharper focus and have caused some to advocate for a retreat from globalization, claiming that its dangers outweigh the benefits (Altman 2020; Greber 2022). Regardless of these con-cerns, however, international interdependence continues and along with it, so do the risks.

With the goal of understanding this precariousness of our modern world, we offer a lens through which to investigate “failures” in history and exam-ine whether there are insights from systemic risk that can illuminate patterns of historical collapse. A certain teleological triumphalism dominates modern social science where victors wrote their histories and survivorship biases lead us to focus on the civilizations that remain standing. We see value in also examining the reverse view by attempting to learn from failed civilizations.

We may have access to insights that past doomed societies lacked—self-aware-ness of our own trajectory toward destruction, access to historical hindsight, and an understanding of themes and patterns that have led to systemic failures in societies. We seek to identify systemic causes and mechanisms for break-down that can provide historians with a systemic perspective for analyzing the past and can allow these past collapses to serve as cautionary tales for our present and future.

This chapter begins with a discussion of hubris as a theme in social develop-ment. We then present a summary of the structure of globalization as a com-plex adaptive system. We follow by defining collapse, then move on to its most significant causes. The penultimate section discusses some of the mechanisms through which isolated failures could lead to systemic collapse. We end with consideration of robustness, resilience, and the governance required to avoid risk and mitigate failures, with the goal of creating a more stable civilization today.

1.2 The Enemy Is Us

We have met the enemy and he is us.

—Walt Kelly 1971

Hubris has been a cautionary theme in mythology, literature, and religionthroughout history. Humans have a habit of taking a few successes as a sign of continued and future prosperity, often extrapolating it into a perception of infallibility. This has led to the construction of ever-taller edifices on fragile foundations. Standing nearly twice the height of the Empire State Building, Dubai’s Burj Khalifa may serve as a contemporary analog to the Tower ofBabel. What would possess us to build something so incongruous with its natu-ral environment, surrounded by a set of environmentally unsustainable desert city-states? Believing that we have it all under control and that tomorrow will be just like today, we create crucial systems on which we depend, neglecting to design into them the robustness and resilience to survive crises. (Pastor-Satorras et al. 2015; Taleb 2007).

We argue that this overconfidence also characterizes globalization (Brauer2018). Over the last half-century, our complex global system has emerged as a set of tightly coupled interactions that together allow for the continued flow of information, money, goods, services, and people. We have clear evidence that in many ways—environmental hazards aside for the moment—globalization has in fact been largely beneficial for humans collectively. Life expectancy has increased globally by more than two decades since 1960 (Roser, Ortiz-Ospina, and Ritchie 2013), and there is continuing evidence that the science of longevity will sharply accelerate (Oeppen 2002; Kannisto et al. 1994). We now produce enough food to feed the planet and enjoy an unprecedented economic and tech-nological standard of living. Like a Roman during the reign of the Antonines, we can look around us and marvel at what we have created (Birley 2000).

Much of this advancement has come through our ability to create systems that are technologically advanced, complex, interdependent, and constructed at massive scale. Expansive networks of telecommunication, transportation, energy, agriculture, and trade, among others, have facilitated this progress, but have given rise to new and unprecedented risks (Manheim 2020; Oughton et al. 2018). We see these networks as complex adaptive systems (CAS), where the interactions of components create new dynamics that cannot be explained by the characteristics of the constituent parts. Because of this complexity, the risks associated with maintaining CAS are non-linear and impossible to predict (Helbing 2009). Emergent risks in such a system are the threats that originate not in any single component, but rather from the collective structure and dynamics of the system in its entirety. In the case of CAS, the risk of systemic failure when looking at the whole may be far greater than when the system is viewed simply as the sum of its parts (Crucitti, Latora, and Marchiori 2004). This is particularly true of “systems-of-systems” that rely on the coordination of various domains. The agricultural system, for example, relies on networks of finance, trade, water, labor, energy, electricity, transportation, communica-tions, and others to efficiently plant, grow, harvest, transport, and sell foodstuffs in a globalized society (Centeno, Callahan, and Patterson 2015; Nyström et al. 2019). A miscoordination or deliberate interference in any of these underlying and interdependent systems could be catastrophic (Ibrahim et al. 2021).

Globalization requires the continuous flow of people, money, commodities, goods, services, and the cooperation of vast numbers of individuals (Danku, Perc, and Szolnoki 2019; Foreman-Peck 2007). COVID-19 has shown us that none of us is isolated from the rest of the globe and the impact of unpredict-able world events. A novel virus can rapidly emerge to bring down economies, influence elections, and humble even the most powerful. Even with warn-ings, foresight, and suggested mitigation strategies, overconfidence and failure of imagination enabled such a deadly scenario (Cambridge Centre for Risk Studies 2019; Epstein 2009; Nuzzo et al. 2019).

We now live in a global system-of-systems where a failure in one part could lead to disaster across the whole structure. The sheer quantity and breadth of possible interactions require a shift in our analysis of interdependence. Moreover, we have added a pursuit of optimization and efficiency to this complex system, which leads to short-term gains but lays the foundation for longer-term catastrophe (Centeno et al. 2015). Global systems, much like the Burj Khalifa, are wonders to behold, but the increase in complexity and tight coupling makes a “normal accident” ever more likely and more dangerous (Perrow 1984; Ledwoch et al. 2018). That is, we have created systems that we can never truly comprehend, whose risk profiles we cannot understand (Wildavsky and Dake 1990), over which no one has responsibility, and on which we have staked our continued survival.

Our hubris lies not only in our overconfidence in our increasingly fragile systems, but more so in our belief that our twenty-first-century civilization is immune to the tragic fates of fallen societies in history. While our modern societies and the systems upon which they rely exist at a scale, scope, and degree of complexity far greater than their historical counterparts, the mecha-nisms of systemic failure and collapse remain the same. In this way, lessons from the past that relate to fundamental systemic characteristics still remain relevant today. Because of the unimaginable magnitude of potential contem-porary collapse, the study of past systems to gain greater insight into our present and future is more urgent and compelling than ever.

1.3 Looking to History

One constant throughout recorded history is that even the most apparently powerful and successful civilizational systems inevitably break down. History has repeatedly demonstrated that the second law of thermodynamics applies to human-created systems: We cannot escape entropy—the inexorable trend toward greater chaos in nature (Meyer and Ponthiere 2020; Gleick 2011). Consequently, no form of social order is eternal.

Several years ago, we (the editors of this book) began a scholarly project on Global Systemic Risk at Princeton University. We sought to bring insights from complexity (Holovatch, Kenna, and Thurner 2017), systems theory (Miller and Page 2007), and network theory (Barabási 2002) to identify: (1) how the systems of globalization work and (2) the risks associated with this global complexity. We understood that it was important not just to analyze the systems and identify key vectors, but also to imagine how it might all come apart (Vespignani 2010). We began to see that the risks to our increasingly interconnected and globalized systems are substantial and that widespread fail-ure could be catastrophic. To anticipate the future, we looked to lessons from the past to discover shared characteristics of doomed civilizations, which might offer warning signs for modern collapse.

What do previous “falls of empire” have to teach us about how we might best prepare for an uncertain and potentially perilous future (Tainter 1988; Middleton 2013; Taleb 2012)? In this chapter, we look to our experience from our study of global systemic risk and systemic collapse to provide insights and perspectives that historians may apply to their study of historical collapse.

1.4 Defining Systemic Collapse

To understand “systemic collapse,” we begin with a standard definition of a sys-tem: “a regularly interacting or interdependent group of units forming a unified whole” (Merriam-Webster). Modern complexity and technology only acceler-ate this interactive interdependence. In our study of collapse, we are interested in how the structure and dynamics of a system decline over time—how this “unified whole” decreases in scale, scope, or cohesion, and how the central axis of action of the system moves from the system itself to its constituent parts.If there is one central theme in the collapse literature, it is that there is notable disagreement about methodology of study, and even the meaning of the term “collapse” (Middleton 2013; Yoffee 2005; Yoffee and Cowgill 1988; Haldon et al. 2020). One area of debate is what exactly constitutes a collapse. Another debate, or criticism, revolves around how our historical view of collapse tends to be influenced by multiple cognitive biases—cultural bias, availability bias, confirmation bias, etc. Another critique is that speaking only of collapse intro-duces failure bias and ignores comparable scenarios where civilizations survived hardships and shocks and thereby conceals or ignores significant elements of robustness and resilience that are important to identify (Nicoll and Zerboni 2020). We have to also address what exactly collapses. One standard focus is the level of social complexity of a society (e.g., level of interdependence, control, or coordination) (Renfrew 1973; Tainter 1988). Another is the level of political control or simple performance measures, such as nutrition or life expectancy (van Zanden et al. 2014).

We recognize that the term “collapse” is somewhat ambiguous with differ-ent definitions across academic disciplines. In this analysis we propose borrow-ing the usage of the term “collapse” from the literature on networks, systems, and complexity. In these fields, collapse refers to the disaggregation and break-ing apart of a connected network. A collapsing complex system breaks down or fragments into smaller units requiring less order, complexity, coordination, and organization to function. The systemic dynamics are thus reduced on a macro scale. This view of collapse from complexity science is consistent with Joseph Tainter’s view of sociopolitical collapse as “a rapid simplification, the loss of an established level of social, political, or economic complexity” (Tainter 1988; Tainter 2006). The best question for such network analyses may be: Has the system lost a significant part of its aggregate functionality (Hernández-Lemus and Siqueiros-García 2013)?

In this type of analysis, what collapses is not necessarily an entire society or civilization, but instead the larger organizational framework (Yoffee 2005; Kauffman 1993). In other words, for many citizens of the society, life goes on, just not at the same level of complex interdependence. So, for example, while the complex systems of the Maya civilization collapsed, the late-classic Maya city-states decentralized and became smaller agglomerations of farmers, allowing ele-ments of the Maya way of life to endure. Similarly, the radius of collapse may also differ such that the failure of some systemic elements does not imply the collapse of the entire status quo ante. The Western Roman Empire became a collection of much smaller political units—with significantly fewer interactions between them—yet the Eastern portion maintained its structure and societal identity in a semblance of its former self for a further thousand years (Mango 2002).

Within the collapse literature, there is discussion about the importance of the temporality or speed and timescale of collapse. While the “rapidity” of systemic simplification is an important element of many definitions, some scholars argue that collapse can also take place over longer timescales. Once a tipping point toward collapse is reached, the breakdown of that society’s interconnectivity begins, whether it takes decades, as in Mycenaea, or centuries, as in the case of the Maya (Middleton 2017).1 Many of the systemic mechanisms we discuss in this chapter are applicable to historical examples of disaggregation and fragmentation that take place over both short- and long-term periods, and we believe that insights from both of these timescales could be relevant to our modern times.

Distinct from collapses, however, are declines, which are inevitable in grad-ual cycles of rise and decline. The two may have very different causes. In distinguishing a collapse from a decline, most discussions of collapse focus on a dramatic event, moment, or tipping point when key indicators begin to mark social fragmentation and breakdown. For our purposes, we identify collapse as a clear inflection point followed by a significant and perceptible reduction in any combination of: (1) level of organization, (2) spatial reach, and (3) socio-economic complexity of a system. (cf. Haldon et al. 2020, 1–3, 15). A collapse may mark the dramatic end of one system, creating the conditions for another system to form in its place.

For a society’s fragmentation to be relevant to our discussion of collapse, it must have significant long-term consequences or costs. That is, social collapse must involve the loss of basic structure or function, or at the very least a decline in critical measures such as nutrition, life expectancy, or peace. Ibn Khaldûn’s term asabiyyah, meaning “group feeling” or “social cohesion,” might represent the antithesis of collapse. Interestingly, in 1377, Ibn Khaldûn wrote in his Muqaddimah that all social systems have collapse written into their structures and that the cycles of rise and decline may be inevitable (Ibn Khaldûn 2015).

It is important to recognize that a society or civilization can experience a major crisis without experiencing a collapse. While the Global Financial Crisis of 2008 was a systemic shock with significant costs, it did not precipitate a collapse of the entire financial system (Coggan 2020, 338–347). The “Second 30 Years War” (1914–1945), however, did produce a collapse in the global, social, and political order (Ferguson 2006). This last example also serves as a reminder that one person’s collapse may be another’s opportunity; in the case of barbaric regimes, collapse is widely welcomed by the oppressed. Similarly, the collapse of nineteenth-century colonial empires might have been lamented in some parts of the world but cele-brated in others. This phenomenon where some constituencies suffer from collapse while others benefit has guided civilizational history. Similarly, within evolutionary biology, a parallel dynamic of collapse and rise has determined the path depend-ency of life on Earth through cycles of species mass extinction and emergence (Richter 2015). For example, perhaps the most dramatic collapse of all, caused by an asteroid 65 million years ago, was certainly a disaster for the dinosaurs, but it provided an ecological opening for mammals.2

Another perspective on collapse can be gained by analyzing collapse—and the systemic transformations that follow—more objectively and descriptively as ecological phenomena with niches disappearing and appearing. In ecologi-cal systems, for example, “collapse” or “release” is a critical phase of cyclical regeneration, which allows for new reorganization as different feedbacks and competition within the system allow for new systemic characteristics to emerge with regrowth (Gunderson and Holling 2002). While a forest fire is devastating for the status quo ante, it creates opportunity for a new cycle of growth, making sunlight and nutrients available for the smaller organisms that seed the early phase of ecosystem cyclicality (Burkhard, Fath, and Müller 2011).

1.5 Identifying the Causes of Collapse

Given the intractable complexity of many historical civilizational systems, it is often difficult to reach consensus on the causes of various collapses. Historian Alexander Demandt famously counted 210 different explanations given for the collapse of the Roman Empire (1984). Others argue that the Roman Empire never truly collapsed but instead fragmented and slowly faded away (Brown 1978).3 An influential explanation for the cause of collapse is Tainter’s theory on diminishing returns on complexity, which argues that civilizations begin to fall once the benefits of their societal complexity are outweighed by the costs (Tainter 1988). More recently, environmental change has become a frequent explanation for the collapse of certain complex societies (Middleton 2017). As with any tragic denouement, it may be impossible to string together the various episodes, mistakes, and challenges that might have led to the loss of asabiyyah. Each observer might choose a different critical moment, decision, or causal variable that precipitated a downfall.4

Generally, we can distinguish between three broad categories of explanations for collapse: Purely exogenous, purely endogenous, and a combination of both exogenous and endogenous. Narratives of purely exogenous causality describe when a shock from outside a system is entirely responsible for its downfall. Volcanic eruptions, earthquakes, and sudden climate shifts have been devastating in human history and are often associated with collapse (Bostrom and Cirkovic 2008; Ord 2020). Similarly, much of history is the story of human invasion, con-quest, and brutality; each of these would be viewed as an exogenous cause by the civilizations conquered. For example, conquest and colonization by those like Alexander the Great, Genghis Khan, or nations of Western Europe often meant the collapse of long-established civilizations in those conquered lands.

By contrast, narratives of collapse that focus entirely on endogenous causes posit that some societal failures would happen regardless of outside forces or pressures. Like Gibbon’s view on Rome, whose “stupendous fabric yielded to the pressure of its own weight,” some societies have internal characteris-tics, which make them vulnerable to failure (1788). Viewing these societies as complex adaptive systems, we can see that these endogenous vulnerabilities are products of how the society is organized, governed, and complexly integrated. As a civilization advances in its growth phase, the structure and dynamics of critical underlying systems—economic production and trade, food and water, communications, and travel, among others—evolve into CAS as well. These CAS are interconnected and interdependent, forming systems-of-systems that weave this weighty fabric and can experience failure absent any precipitating exogenous shock. The most relevant causes of collapse may not be the specific factors that initiate the process, but rather the structure that allows perturba-tion and contagion to amplify through the system as in a chemical reaction. Thus, collapse may not be precipitated by the failure of any single component, but instead by the unexpected dynamic interactions of countless nodes in a complex network. Instead of individual causes, we might better focus on the systemic mechanisms that escalate local challenges into existential crises that lead to collapse.

Endogenous failures can originate from impracticalities of systemic scale and complexity or can have sociological or political origins. Systems can depend too much on a tightly knit and complex base, which cannot endure forever, or the society can lose the political authority or social cohesion required for its function. Other human elements that can generate endogenous fragilities include corruption, loss of legitimacy or trust, unsustainable inequality, shortsightedness driven by hyperbolic discounting, overuse of resources, misplaced faith in the reliability of advanced technologies, and an overemphasis on efficiency. Vulnerabilities can appear when a sclerotic bureaucracy and corrupt elite fail to properly maintain critical systems. Similarly, the inability of political authority to guarantee safety and security can lead to societal fragmentation, resulting in a loss of economies of scale—if not a complete breakdown of systems. Tainter’s theory of decreasing returns on complexity is a prominent explanation for increasing endogenous fragility (1988). In other writing on endogenous elements of collapse, Peter Turchin identifies “principal components” of societal organization and dynamics that may explain crises and outcomes (2016).

The third narrative of collapse puts the culpability for failure on some combination of both exogenous and endogenous elements. Here, an exogenous shock— environmental, financial, military, epidemiological, et cetera—stresses a society, its structures, and its systems beyond the breaking point. Exogenous explanations alone, while salient and dramatic, can neglect the importance of internal systemic characteristics that enabled, accelerated, or perpetuated the collapse. Depending on the internal systemic structure, an external shock, which might be easily survivable by one system, could be a death sentence for another. Thus, of greater relevance than the exogenous shock itself are the endogenous differences between the two systems that explain these disparate results. In this way, viewing collapse as simply the consequence of unlucky exogenous shocks makes for an unsatisfying account (Bailey 2011). In our highly engineered modern complex systems, these internal vulnerabilities are even more determinative to system survival. As these vulnerabilities are within our agency to influence, they are particularly worthy of our study. It may not be possible to avoid exogenous shocks from earthquakes, asteroids, droughts, or plagues, but with foresight and understanding, societal systems can be designed with greater resilience to withstand these shocks.

1.6 Systemic Mechanisms of Collapse

Recognizing that endogenous systemic characteristics are critical to many explanations of collapse, we now turn toward systems theory and complexity science to identify mechanisms that can propagate systemic—and therefore societal— fragmentation and failure. Just as all ecological and human-made systems share components and behaviors that allow for growth or development (Siskin 2016; Kauffman 2013), societies throughout history share common systemic structures that enabled their evolution. As a society develops, however, the systemic properties that were critical to its growth could provide the pathways for its rapid unraveling. Here, we explore some of these critical systemic mechanisms of collapse.

1.6.1 Tipping Points

Every complex social system contains thresholds beyond which social cohesion falls apart. These tipping points are the levels of tolerance within a system that, when exceeded, mark the rapid transition to a new state or equilibrium. For societies, this could be the moment when longstanding behaviors of individuals, groups, or the society as a whole suddenly have more drastic consequences than expected. This is a result of inertia, force, stress, or momentum building up that leads to a phase change, causing the system to transition into a different equilibrium structure or dynamics. Tipping points can serve as gateways of opportunity or pathways to failure (Milkoreit et al. 2018). Examples of tipping points with negative consequences include the proverbial final straw breaking a camel’s back or a rubber band stretched beyond its breaking point: After a minor additional stress, it loses its functionality. An example of a tipping point that leads to greater systemic resilience is that of herd immunity—after a population reaches a certain threshold of immunity, the vectors of transmission become vanishingly small, effectively reducing the probability of further outbreak. The key in all instances is the persistence or irreversibility of the transformation (Dakos et al. 2019; Bentley et al. 2014).

It may well be impossible to predict a tipping point, or even identify it post hoc, because it may be contextual—only becoming critical under certain circumstances. The most frequent examples of tipping points may be found at the start of wars where antagonism, fears, and perceived injustices lead to the creation of a spiral into violence. In Thucydides’ account of the negotiations between Sparta and Athens, the debate in Corinth may be seen as the tipping point leading to the resolution of the Thucydides Trap (Robinson 2017). Or consider a doomsday weapon à la Dr. Strangelove, established precisely as a public “red line,” or “line in the sand,” the crossing of which begins a chain reaction that cannot be stopped. Caesar’s crossing of the Rubicon can be regarded as one such tipping point. Again, the central lesson from tipping points is that an apparently small perturbation can set off a series of events that leads to irreversible change, or in the worst scenario, collapse.

1.6.2 Feedback Loops

Stable social systems are fundamentally cooperative and reciprocal, with systemic dynamics that reinforce (or undermine) this social cohesion through feedback loops. These are structures that use the measure of output from a process to determine the subsequent input back into the beginning of the cycle (Martin 1997). Feedback loops are critical to the nature and behavior of a system and can determine how the system responds to—and manages— shocks. Positive feedback loops, for example, magnify systemic perturbations, while negative feedbacks work to dampen the impact of these shocks, leading to greater stability in the system (Miller and Page 2007, 50–52; Ashby 1956, 53–54; B. Walker and Salt 2006, 164). These feedback effects can have significant systemic consequences as positive loops drive change away from the current equilibrium toward new steady or stable states, while negative loops work to resist that change and reinforce the current steady state.

When studying instances of historical collapse, it may be important to identify feedback loops, with either positive feedback loops causing a stable society to spiral into disorder, or negative feedback loops enabling a social system to absorb otherwise catastrophic shocks (Turchin 2005).

Many incentive systems are forms of feedback loops: As a result of a certain level of performance, rewards or punishments are determined for the next round, in a game theoretic framework (Yang, Neal, and Abdollahian 2017). The human nervous system (Lessard 2009) is an example of a feedback loop where we are encouraged or discouraged from certain forms of behavior by signals of pleasure or pain. An important characteristic of feedback loops is the time lag that dictates the speed of the loop. In the case of the nervous system, the lag is relatively short, but in large and complex human or ecological systems, the lag can take up to years, generations, or even longer.

Within social systems, social norms and institutionalized rules are forms of feedback loops, as they determine responses to individual actions. Certain feedback loops are critical to establishing stable equilibria. For example, in complex economic systems and markets, the relationship between supply, demand, and price may be seen as a constantly iterative loop of inputs and outputs, feeding back on each other to arrive at an equilibrium price and quantity. Similarly, in the struggle against chaos and entropy, an equilibrium of peace and prosperity in a civilization can be maintained through feedback loops driven by social norms.

1.6.3 Contagions

The COVID-19 pandemic made the phenomenon of contagion spreading through networks far too familiar, and highlighted the inexorable systemic risk inherent in globalization (Smil 2019). From a network science perspective, contagion involves the passing of objects, effects, or characteristics from one node to another, transmitted through contact or a systemic connection: A person may infect a group by coughing, someone shouting “Fire!” may lead to the spread of alarm or panic, or the failure of one part of a system may lead to malfunction elsewhere or even of the whole. Similar to tipping points and feedback loops, contagion might also be considered beneficial if the result is considered valuable. The “viral” diffusion of a new invention or technology can be an example of a beneficial contagion. The replication and propagation of information through memetics is an example of how ideas can spread within and between societies through the process of diffusion and contagion (Lynch 1996). While contagion of concepts and inventions can benefit society, risk of collapse can increase with the spread of ideas that undermine social order and social cohesion. In highly connected societies, the mechanism of contagion allows shocks that would otherwise be isolated to one sector or region to propagate and potentially lead to collapse.

1.6.4 Cascades

A cascade—or uncontrollable domino effect—might be best thought of as a combination of tipping points and contagion. When a node reaches a tipping point and fails, that failure can be transmitted to neighboring nodes through the links or connections in the system. This can trigger second-order failures, which can in-turn precipitate a sequence of breakdowns, causing an uncontrollable chain reaction, or cascade. As the regular dynamics of the system spiral out of control, the structure of a highly connected system can allow the cascade to increase exponentially in both speed and magnitude. In this way, complex systems can contain within them leverage that increases the magnitude of the failure at each step in the cascade (Rocha et al. 2018, Watts 2002, Buldyrev et al. 2010).

Perhaps the best-known cascading failures in our modern systems are within highly coupled energy infrastructures. Widespread blackouts, for example, often involve a domino effect of overloaded electrical infrastructure as transformers and transmission lines begin to fail (Korkali et al. 2017). In political systems, the assassination of Franz Ferdinand in 1914 is perhaps the most infamous instance in modern history of a cascading failure. Interdependent nations tightly coupled through alliances designed to increase geopolitical systemic resilience created pathways and dynamics for a cataclysmic cascading failure. One domino fell and ultimately led to a world-transforming global conflict (Clark 2014).

1.6.5 Synchronous Failures

While complex systems may be designed to survive individual localized failures, a certain number of such failures occurring simultaneously could overwhelm any system. Such a “perfect storm” of events is considered a synchronous failure. Probability theory dictates that random events will eventually occur simultaneously, or at least in close proximity of time or location. This clustering of failures, or the simultaneous and synergistic interaction of several failures, may result in a challenge unimagined by designers, and for which the system is not prepared (Homer-Dixon et al. 2015).

Charles Perrow’s concept of a “normal accident” illustrates how such an apparently innocuous confluence of events can lead to catastrophe (Perrow 1984). In tightly coupled and complex systems, two apparently unrelated events can lead to a disastrous outcome. Natural disasters are particularly dangerous because they often precipitate the simultaneous failure of various social systems. The response to the failure of one part of a system might then lead to a strain in another part that leads to systemic breakdown.

Synchronous failures are particularly threatening because no individual or society can prepare for the infinite number of disastrous combinations and consequences (West 2017). We might be able to create mechanisms to deal with individual problems, but in the face of multiple failures, resources may be taxed beyond their limits. In the case of complex systems, the interaction of failures may lead to consequences not expected from each failure in isolation. Invaded societies weakened by novel pathogens found themselves fighting two battles instead of one. While either invasion or pandemic may have been manageable shocks on their own, the confluence of both could serve as a coup de grâce.

1.6.6 Cycles

The notion of civilizational or biological cycles is central to behavioral and natural sciences. The organic cycle of growth and decay is one that dominates our planet (Walker, Packard, and Cody 2017). Death and decomposition make new biological life possible, and within the “adaptive cycle,” a systemic collapse can provide opportunity for a new type of ecosystem to take root (Gunderson and Holling 2002). For over a half-century, economic policy has been guided by attempts to regulate the cyclical nature of inflation and unemployment, booms, and busts. The central notion of Keynesianism is to avoid the deep troughs of the cycle through monetary and fiscal intervention (Skidelsky 2018). Many civilizations have experienced secular cycles of expansion, stagflation, crisis, and depression (Turchin and Nefedov 2009). Ecological systems experience oscillating cycles of population growth and decline based on factors such as predator– prey dynamics (Volterra 1928). Similarly, climate systems experience natural cycles through the activity of sunspots and astronomical interactions, resulting in temperature fluctuations and drought. These cycles in environmental systems can be catastrophic for civilizations that are unexpectedly deprived of food or water (Parker 2013).

Many societies, such as the Mexica, organized their lives in accordance with a calendar of rise and decline (Boone 2007). Cultures and religions have embraced the notion of reincarnation reflecting their faith in the inevitability of the cycle of life, death, and rebirth. Since at least the Enlightenment—or even the Renaissance—European and associated societies have sought to escape the inevitability of cyclicality and have constructed the expectation of linear progress. While this aspirational desire to transcend cyclicality may facilitate economic and social dynamism (Sweezy 1943), it also makes cyclical decline unexpected and threatening. Cyclicality implies a natural rise and inevitable fall; understanding this universality should inspire a humility that every civilization could—at any moment—be at its apex. Much like Shelley’s Ozymandias, even the mightiest civilizations that expected to prosper eternally ultimately transformed, declined, or collapsed (Shelley 1818).

1.7 Robustness and Resilience

The limits of systems will inevitably be tested through exogenous shocks, endogenous characteristics, and emergent properties that threaten failure. The concepts of robustness and resilience have migrated from engineering and ecology into all disciplines in which systems are studied. These concepts describe how vulnerabilities caused by the aforementioned systemic mechanisms can be prevented, and systemic fragilities can be mitigated (Evans and Reid 2013; Levin and Lubchenco 2008). Robustness often refers to the capacity of any system—a human body, a city, a tropical forest, or even a civilization—to withstand shocks and disruptions (Walker and Cooper 2011). Resilience often describes the ability of a system to be flexible and adaptable in order to survive and recover after a brief failure.5 For example, a robust city could have levees to keep floodwaters at bay, while a resilient one would have infrastructure in place to quickly rebuild after a disaster. A robustness approach to regulation might focus on preventing failures in our logistical, economic, infrastructural, or epidemiological systems, while a resilience approach might design triage protocols, contingencies, and recovery plans to mitigate the damage and accelerate the return to normal operation.

In the design or engineering of systems, robustness and resilience are often in tension and represent a series of tradeoffs: While it is best to be both strong and adaptable, physical realities often force the prioritization of one over the other. Building each requires significant resources, and both cannot be maximized. The ideal systemic design or evolution will weigh, balance, and combine these two qualities to achieve a “golden mean” depending on preferences and contexts. It is in these tradeoffs and balances that we find challenging policy dilemmas.

Systemic resilience and robustness are “public goods” that are eroded by a lack of fiduciary planning and maintenance. This erosion leads to fragilities in the system, making collapse through endogenous mechanisms more likely. One short-sighted behavior creating systemic fragility is the focus on ever-increasing efficiency, where cost savings and just-in-time management have replaced redundancy, slack, and reserves. Such overemphasis on efficiency creates greater systemic interdependence of nodes in a network through increased reliance on suppliers, making modern systems more fragile and susceptible to collapse. Other oversights of fiduciary planning can give rise to negative externalities, such as in the “tragedy of the commons” where short-run self-interest—rather than coordination and cooperation— can lead to systemic failure (Hardin 1968).

Another example of short-term optimization that threatens robustness and resilience occurs when decision-makers within systems focus primarily on their relationships with those to whom they are immediately connected, neglecting to consider the inherent endogenous systemic risks beyond the control of any one participant. An example from the financial system occurs when each participant verifies the credit-worthiness of just their own trading partners and counterparties, ignoring the reality that other more distant members of the network could fail, causing an unavoidable chain reaction of contagion—such as a bank run—to propagate through the system (Gorton and Metrick 2012).

Governance strategies should include an awareness of the mechanisms of collapse and the managerial failures that threaten the viability of our modern systems. Though they come at the cost of efficiency, systemic features like reserves, redundancies, contingencies, and diversification can bolster resilience and robustness, and reduce over-dependence on heavily trafficked choke points or “too big to fail” trading partners. Similarly, design elements that act like firewalls or circuit breakers within a system can counteract system dynamics that would otherwise lead to collapse. Resilience and robustness can be prioritized through regulations and standards that incentivize more prudent—if less efficient—systemic organization.

1.8 Conclusion

Globalization at an ever-increasing scale and level of complexity is a modern tale of hubris. Building increasingly technologically advanced, interconnected, and interdependent systems without an awareness of the risky mechanisms inherent in their design will inexorably lead to endogenous failures and potential collapse. These risks of globalization have brought us to our study of systemic risk, and to our interest in learning insights about systemic collapse from history.

At first glance, one may find few similarities between ancient civilizations and our modern globalized present. When we see these civilizations as complex adaptive systems, however, we can begin to recognize patterns, structures, and dynamics that have remained consistent through the centuries. Mechanisms like tipping points, feedback loops, contagions, cascades, synchronous failures, and cycles that can be responsible for systemic collapse are fundamental characteristics of any complex adaptive system, and can therefore serve as a useful common denominator from which to examine collapses through the ages. We offer this systemic framework for the study of historical collapse with the belief that these common mechanisms will help illuminate and expose relevant vulnerabilities in historical systems. In the end, our hope is that we may learn from past societies and civilizations and allow our modern systems to benefit from lessons of systemic failure that historians may share with us. As the weight of our modern civilizational fabric grows, and as the strains increase, we believe these insights could inform how we see our own systemic vulnerabilities and help to build a more robust and resilient future.

[PARAGRAPH BREAKS PAUSE]

Notes This chapter is a continuation in our study of historical systemic collapse, with earlier analysis published in Izdebski, Haldon, and Filipkowski (2022: 59–74). 1 Guy Middleton hints at this debate in his book Understanding Collapse: Ancient History and Modern Myths, saying “the Mycenaean collapse was fairly rapid, taking place probably over a few decades, whereas the Maya collapse took place over as much as three centuries, which has led to some wondering why it is termed a collapse at all” (Middleton 2017, 342) 2 Among some scholars, there remains some discomfort with the asteroid theory, with others focusing on the volcanic activity in the Deccan Plateau (Keller, Sahni, and Bajpai 2009). 3 A similar argument has flared concerning the Meghalayan Age beginning around 2200 BC with disputes about the extent of global civilizational collapse (Middleton 2018). 4 For an excellent overview of the literature on causes of collapse, see Haldon et al. 2020. 5 As a note on usage, the terms robustness and resilience are often defined differently in different fields, such as ecology and engineering. While engineering often separates robustness and resilience into two distinct concepts, scholars within ecology often combine the meanings of both robustness and resilience into the term “resilience” (Bak 1996; West 2017; Barabási 2016; Holme 2019; Broido and Clauset 2019). In this chapter, we adopt the engineering perspective in our analysis here to reflect the human agency involved in constructing elements of robustness and resilience in human-made systems upon which civilizations rely. References Altman, Steven A. 2020. Will Covid-19 Have a Lasting Impact on Globalization? Harvard Business Review, May 20, 2020. Ashby, W. Ross. 1961. An Introduction to Cybernetics. First edition. London: Chapman & Hall, Ltd. Bailey, Mark. 2011. Risk and Natural Catastrophes: The Long View. In Risk, edited by Layla Skinns, Michael Scott, and Tony Cox, 131–158. New York: Cambridge University Press. Bak, Per. 1996. How Nature Works: The Science of Self-Organized Criticality. First edition. 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Tucson: University of Arizona Press. 2 2.1 Collapse Explanations in Historical Perspective Archaeology and history have long been uncertain about how to understand collapses. These disciplines have predominantly had a progressivist narrative. Archaeologists and historians are socialized members of complex societies. We have been raised in the ideology of modern industrial societies, which emphasizes progress. So we write about how our ancestors tamed fire, developed agriculture, invented the wheel and writing, established metallurgy and cities, and created states all the while improving human life. Much of this narrative resembles what anthropologists term ancestor myths. Ancestor myths validate a contemporary social order by presenting it as a natural, and sometimes heroic, progression from a simpler and less desirable past to the idealized way that we live today. Within this narrative, collapses and dark ages have presented troubling contradictions to the story of humanity’s continual progress. If the arc of history leads to inexorable improvement of the human condition, how could that trajectory ever be interrupted? Equally troubling, if collapses happened in the past, could one happen again? It is difficult to pinpoint when collapse studies began. Much depends on how one defines the term. It is common to look to Edward Gibbon’s The Decline and Fall of the Roman Empire (1776–1788) as the progenitor of modern collapse literature. Gibbon considered the ends of both the Western and Eastern Roman empires. He thereby subsumed two different historical processes—loss of political unity and overall simplification in the West versus replacement of one empire with another in the East—under the single term “decline and fall.” This problem of terminology gives an early hint of why collapse has been so difficult to explain. Another hint is given by what may be Gibbon’s greatest insight: The wonder is not that Rome fell, he repeatedly wrote, but that it lasted so long. Such an institution, Gibbon thought, was intrinsically impermanent. Other authors in Gibbon’s era addressed decline and fall. C. F. Volney ascribed collapse to greed and class conflict. As a result of greed and class conflict, he wrote: a holy indolence spread over the political world; the fields were deserted, empires depopulated, monuments neglected and deserts multiplied; How Scholars Explain Collapse Joseph A. Tainter DOI: 10.4324/9781003331384-4 26 Joseph A. Tainter﻿ ignorance, superstition and fanaticism combining their operations, overwhelmed the earth with devastation and ruin. (Volney 1793: 51) Charles-Louis Montesquieu advanced an argument based on morality: Roman power derived from Roman virtue, which declined when the Romans advanced beyond Italy (1968). The great Arab historian Ibn Khaldun, in the fourteenth century, continued the ancient tradition of considering history to be cyclical (1958 [original 1377–1381]). Dynasties, he thought, have a natural life span like individuals. In the course of dynastic succession, rulers become ever more addicted to luxuries and security. Taxes are raised to pay for these. Whereas at the beginning of a dynasty large revenues are received from small assessments, at the end of a dynasty this situation is reversed. When taxes are low, the population is more productive and the tax yield is greater. Yet as the dynasty evolves, increased spending on luxuries leads to higher taxes. Eventually taxes become so burdensome that productivity first declines, and then is stifled. As more taxes are enacted to counter this, the point is finally reached where the polity is destroyed by desert nomads. The greatest cyclical theorist was the Greek historian Polybius. In the second century BC, he predicted the fall of the Roman Empire some 600 years before it actually happened. Societies, to ancient historians like Polybius, develop like the biological cycle through growth, maturity, senescence, and death. It was thus no challenge to predict that Rome would eventually fall. The biological analogy of societal evolution was common in the ancient world. It appears in Plato’s Laws, no doubt based on long-established thinking. Although long in disrepute, cyclical theory has been resurrected recently by the population biologist Peter Turchin (2003), who bases his approach on Ibn Khaldun. C. S. Holling’s Resilience Theory (e.g., 2001) is a nuanced update to cyclical theory. In Resilience Theory, the basic model derives from forest succession rather than from the growth and death of organisms. Norman Yoffee (1988) has pointed to early Mesopotamian literature that may be the earliest surviving ancestral explanation of collapse. In considering the fall of Sargon of Akkad and of the Third Dynasty of Ur, the decline of empires was ascribed by Mesopotamian writers to the impiousness of rulers, and to marauding enemies sent by the gods as punishment. Cities flourish under good kings but suffer under impious ones. This gives 3,000 years of ancestry to writings about collapse and related processes. Shortly later we find literature in China ascribing the problems of the Western Chou dynasty (1122–771 BC) to a similar cause: the failure of rulers. This is expressed in the poem Shao-min: Compassionate Heaven is arrayed in anger Heaven is indeed sending down rain, Afflicting us with famine, ﻿How Scholars Explain Collapse 27 So that the people are all wandering fugitives; In the settled regions and on the border all is desolation. Heaven sends down its web of crime; Devouring insects weary and confuse men’s minds, Ignorant, oppressive, negligent, Breeders of confusion, utterly perverse; These are the men employed to tranquilize our country. … Oh! Alas! Among the men of the present day, Are there not still some with the old virtue? (Hsu and Linduff 1988: 283–284) Collapse theories often express ideals and criticisms of the social world (Carr 1961: 37). These theories are influenced by, and sometimes attempt to influence, contemporary social issues. During the tumultuous eighteenth century, for example, Giambattista Vico (Bergin and Fisch 1948) and C. F. Volney (1793)) attributed collapse to factionalism and conflict, while Gibbon (1776– 1788) saw in the Roman collapse a failure of leadership. In the aftermath of World War I, the German Spengler foresaw the decline of the West (1962 [original 1918, 1922]), while the expatriate academic Rostovtzeff (1926) perceived in the Roman collapse a foretaste of the Russian Revolution. The moral uncertainty of the twentieth century influenced Toynbee’s (1962) emphasis on internal discord in spiritual values. Many writers today link collapse to environmental resources, with failure brought on by anthropogenic degradation, climate change, or a combination of factors including these. Where the explanation focuses on environmental damage a collapse is like a Greek tragedy: The protagonist brings on self-destruction. The message of this literature is that tragedy is avoidable with foresight and moral behavior. There are many strands in collapse theories, strands that persist through the centuries and millennia of collapse literature (Tainter 1988). While these strands do seem to persist, they wax and wane in popularity. Since collapse is commonly seen as a failure, someone must be responsible. A theme common among earlier writers is that an individual or group did not rule properly or fulfill a responsibility, and so an empire fell or a dynasty perished. Usually the failure is attributed to the paramount ruler. Ibn Khaldun’s (1958 [original 1377–1381]) theory of cyclical dynastic succession in medieval North Africa is a classic of this genre. The causal force in this framework, as noted, is the changing morality of rulers. Kings and emperors have frequently legitimized their rule by claiming a role as divine intermediaries (e.g., Netting 1972). They are thus responsible for the weather and a good harvest (much as presidents and prime ministers today are considered responsible for a good economy). Poor weather and a failed harvest would indicate that the ruler had not fulfilled this responsibility. The history of China illustrates this attitude. Widespread catastrophes, failures 28 Joseph A. Tainter﻿ of crops, and unrest were taken as signs that a dynasty had lost the Mandate of Heaven, which legitimized rule (Lattimore 1940; Fairbank, Reischauer, and Craig 1973). The loss of the Mandate of Heaven was a signal that a dynasty’s end was near. The final years of the Western Chou Dynasty (1027–771 BC), for example, produced remarkable literature on the many disturbances unfolding simultaneously. One poem related the natural catastrophes of the times. Grandly flashes the lightning of the thunder; There is a want of rest, a want of good. The streams all bubble up and overflow. The crags on the hill-tops fall down. High banks become valleys; Deep valleys become hills. Alas for the men of this time! Why does (the King) not stop these things? (Hsu and Linduff 1988: 281) A variant of this approach is that kings and emperors may not be exclusively to blame for collapse. The fault rather belongs to entire social strata, particularly the elites. Tenney Frank, for example, ascribed the Roman failure to a lack of vision on the part of the landed gentry: Their willingness during the Republic to betray the peasantry for large slave estates and to accept the monarchy for personal safety (1940: 304). Christopher Caudwell indicted soil impoverishment by large estates and the general demoralization of the exploited class (1971: 55). Arthur Boak and William Sinnigen singled out the fact that: Rome failed to develop an economic system that could give to the working classes of the Empire living conditions sufficiently advantageous to encourage them to support it devotedly and to reproduce in adequate numbers. (1965: 522) Samuel Dill also cited the economic weakness of the Roman class system but believed that collapse was due to the ruin of the middle class and the municipalities (1899: 245). There is a long history within anthropology and other social sciences of scholarly interest in the environmental dimensions of social life (e.g., Forde 1934; Hack 1942; Kroeber 1939; Steward 1938; Thomas 1956; Wissler 1917). This interest has naturally found expression in the study of collapse (e.g., Cooke 1931; Sanders 1962, 1963; Adams 1981; Culbert 1988). In general the literature of this strand postulates that collapses result from shortages of resources, brought on by normal environmental variation, abrupt climate shifts, or human damage. This approach to understanding collapse is experiencing a renaissance of popularity. Contemporary discussions of our own sustainability and sustainable development frequently postulate that ancient societies collapsed because ﻿How Scholars Explain Collapse 29 they degraded their environments (e.g., Brown 2001; Heinberg 2003, 2004; Ponting 1991), justifying the concern that today’s societies could collapse for the same reason. Academics have responded to this popular movement with books and papers addressing human–environment interactions over the long term (e.g., Chew 2001, 2007; Costanza et al. 2007; Costanza, Graumlich, and Steffen 2007; Fagan 2000; Flenley and Bahn 2002; McIntosh, Tainter, and McIntosh 2000a, 2000b; Redman 1999; Redman et al. 1999; Tainter 2000; van der Leeuw 1998, 2000; van der Leeuw and Redman 2002). Much of this recent professional literature seeks explicitly to connect historical research to current environmental concerns. An environmental focus, though, requires adjustments in the assignment of blame. It is expectable that collapses in the days of rule by kings and emperors were attributed to the failings of leaders or the class from which they came. In the days of democracy and mass consumption, though, blame is not so easily narrowed. The people themselves must be responsible for collapse, so it is thought. This is so whether the collapse occurred in the past or is merely foretold. Louis West (1933) offered an early attribution of collapse to the masses. West wrote in an age when economic concerns outweighed environmental ones, and when capitalism and socialism vied for supremacy. The weakness leading to the Roman collapse, according to West, came not from the elites but from the parasitical poor: In a word, the poor and the army [of Rome] had eaten up the capital of the thrifty, and the western half of Europe sank into the dark ages, from which it did not emerge until the thrifty and energetic could again safely use their abilities in wealth-producing activities. (West 1933: 106) Whereas collapses were once attributed to impious or selfish rulers, or in West’s view to indolent masses, in today’s framework the sin is gluttony: Ancient societies collapsed because they overshot the carrying capacities of their environments, degrading their support bases in the process. And since it happened to past societies, it could happen to us too (Ponting 1991; Brown 2001; Flenley and Bahn 2002; Heinberg 2003, 2004; Diamond 2005). According to contemporary literature, the next collapse will come because all of us have consumed too many goods, eaten too much, traveled too far, and produced too many children. The Greek tragedy unfolds even as numerous Cassandras warn us to mend our ways. There is, however, another strand of thought that holds humans blameless. Collapses happen. J. B. Bury (1923) once argued that there was no systematic reason for the fall of Rome. It resulted from a series of contingent events—the irruption of the Huns, Roman mismanagement, weak emperors, and employment of barbarians in the army, all occurring over a short time. In other literature the factor precipitating collapse is thought to have been a change in climate: 30 Joseph A. Tainter﻿ Cold, heat, or drought deprived a society of the resources it required, and collapse ensued. Both scholars and the public find climate change to be perpetually attractive as an explanation of cultural change. It offers a simple solution to complicated problems. Ellsworth Huntington (1915, 1917) pioneered this line of inquiry. He was followed a few decades later by Nels Winkless and Iben Browning, who published a semi-popular book titled Climate and the Affairs of Men (1975). (Iben Browning, a zoologist by training, later gained notoriety when he predicted that a catastrophic earthquake would strike New Madrid, Missouri, around 2–3 December 1990. It didn’t happen.) Archaeologists and climatologists have postulated that climate change forced collapses and abandonments in cases as far-flung as Old Kingdom Egypt (e.g., Butzer 1976), Mycenaean Greece (e.g., Carpenter 1966), the American Southwest (e.g., Reed 1944), and Highland Mesoamerica (e.g., Weaver 1972). Hubert Lamb, in a magisterial work (1982), traced the cultural effects of climate change across much of the globe. As it has become clear that climate change will affect our own way of life, scholars have recently found that climate affected ancient civilizations from Mesopotamia (Weiss et al. 1993), to Peru (Binford et al. 1997), Greenland (McGovern 1994), and the Maya Lowlands (Hodell, Curtis, and Brenner 1995; deMenocal 2001; Haug et al. 2003). Here, too, the implicit message concerns anthropogenic degradation, if indirectly: Past societies were destroyed by abrupt climate change, although for them it was unforeseeable. We, however, must take care not to cause such a change ourselves. 2.2 Is There a Common Trend in Current Collapse Explanations? Collapse studies clearly have a long history, involving a plethora of explanations. The literature on collapse has become vast, especially since 1988. Is it possible to synthesize from this literature common explanatory themes, or even a consensus? Fortunately two studies have considered collapse cases in breadth, and to some extent in depth. These are the studies by Tainter (1988) and Middleton (2017). As listed in Table 2.1, 18 cases can be extracted from these works, to which I add a recent study of the collapse of Cahokia in the American Midwest (Tainter 2019). For these 19 cases of collapse, 64 explanations have been advanced. The 64 explanations can be condensed into 10 themes, as follows: 1. Climate change (the Egyptian First Intermediate Period, Akkad, the Harappans, the Mycenaeans, the Hittites, the Western Roman Empire, Teotihuacan, Tiwanaku, the Maya, Chaco Canyon). 2. Invaders/external conflict (Akkad, the Third Dynasty of Ur, the Western Chou Dynasty, the Harappans, the Minoans, the Mycenaeans, the Hittites, the Western Roman Empire, the Maya, Teotihuacan, Easter Island, Akkad). 3. Revolt/rebellion (the Egyptian First Intermediate Period, Akkad, Monte Albán, the Mycenaeans, Teotihuacan, the Maya). ﻿How Scholars Explain Collapse 31 4. Intra-societal conflict (the Egyptian First Intermediate Period, Akkad, the Third Dynasty of Ur, the Harappans, Minoan Crete, Teotihuacan, the Western Roman Empire, the Maya, Huari, the Mycenaeans, Easter Island). 5. Environmental deterioration (other than climate change) (the Harappans, the Maya, Easter Island, the Third Dynasty of Ur, the Western Roman Empire, the Abbasid Caliphate, Cahokia, the Ik). 6. Catastrophes (e.g., epidemics, plagues, earthquakes, volcanoes) (the Minoans, the Mycenaeans, the Western Roman Empire, the Maya, Teotihuacan). 7. Change in trade patterns (the Mycenaeans, the Hittites, the Maya). 8. Mystical (e.g., religious/ideological change; dysfunctional belief systems; ethics; cyclical theory; concepts such as “decadence;” loss of faith in rulers) (the Western Roman Empire, Teotihuacan, Huari, the Maya). 9. Economics of complexity (the Western Roman Empire, the Maya, Chaco Canyon, Cahokia). 10. Chance concatenation of events (the Western Roman Empire). There are some clearly favored explanations in this list, as follows: • –Invaders/external conflict (12 explanations) • –Intra-societal conflict (11 explanations) • –Climate change (10 explanations) Many scholars explain collapse as resulting suddenly and surprisingly from outside a society, a “bolt from the blue,” rather than searching for systematic explanations or cross-cultural regularities. In the list above we can see the following: • –Climate change (10 explanations) • –Invaders (12 explanations) Table 2.1 Collapse Cases (After Tainter [1988, 2019] and Middleton [2017]).a Old Kingdom Egypt Teotihuacan Akkad The Classic Maya The Third Dynasty of Ur Tiwanaku The Harappans Huari Minoan Crete Easter Island (Rapa Nui) Mycenaean Greece Chaco Canyon The Hittites Cahokia The Western Roman Empire The Abbasid Caliphate Monte Albán The Ik The Western Chou Dynasty a Two cases considered by Middleton—Moche and Angkor—are not included here since they were not collapses. Easter Island (Rapa Nui) is included, although its collapse appears to have occurred in the historic period, due to European contact (Mulrooney et al. 2010). 32 Joseph A. Tainter﻿ • –Catastrophes (5 explanations) • –Chance concatenation of events (1 explanation) The literature thus reveals 28 explanations that might be characterized as the deus ex machina theory of collapse. The term derives from the ancient, classical theater in which, if a plot became too complicated to resolve, a god would descend on a machine and sort everything out. In collapse studies, the god from the machine is some bolt from the blue, an unforeseeable occurrence such as a change in climate that clarifies a complicated and mysterious historical event. Forty-four percent (28/64) of collapse explanations fall within this theme. Another way of characterizing the deus ex machina theory of collapse is that at least a plurality of scholars believe that collapse is just bad luck. 2.3 Concluding Remarks Misia Landau (1984) observed that descriptions of human biological evolution have a narrative structure like myths or folk tales. In such stories, the hero starts from humble beginnings, just as humans began as merely another unassuming primate. The hero undergoes various trials, acquiring new capabilities in the process—just as humans acquired an opposable thumb, upright posture, and a large brain. The hero finally triumphs—as did humans—although this triumph is often not the end of the story. In this narrative structure, we can also see our ancestor myths about the evolution of complex societies. Human society began as small, humble, and threatened. But through heroic efforts, we discovered fire and agriculture and invented the wheel, metallurgy, cities, and civil society. These new capabilities facilitated the emergence of civilization, making humanity triumphant over nature. The hero—humanity—had achieved its quest. In many myths, though, the hero is destroyed through pride or hubris. Just so, civilizations have collapsed, often through their own faults, and many people worry that it could happen again. I noted at the beginning of this chapter that collapse explanations wax and wane in popularity according to the issues of the day. As related above, in the eighteenth century, Volney, Gibbon, and their contemporaries saw collapse as resulting from the sort of factionalism occurring in their time, which the drafters of the American Constitution tried to counter. Collapse explanations were influenced by the world wars. During the Cold War, we had theories attributing collapse to elite mismanagement, class conflict, and peasant revolts. The environmental movement brought attention to environmental degradation in ancient societies. As global warming became an issue, scholars of the past began to discover that ancient societies collapsed due to climate change. If elite consumption once caused collapses, today the reason must be mass consumerism. The trend cannot stop there. Given recent developments in the public arena, inevitably someone must propose that societies are made vulnerable to collapse by inequality and “the 1%.” In fact, some authors already have. Such a model has been proposed by Motesharrei, Rivas, and Kalnay (2014). Their research ﻿How Scholars Explain Collapse 33 was sponsored by that bastion of historical inquiry, NASA’s Goddard Space Flight Center, and was based on sociological research published in obscure physics journals (Kloor 2014). Collapse theories are influenced by contemporary issues. They are influenced by our need for an ancestor myth, which the phenomenon of collapse seems to contradict. They are even influenced by the structure of folk tales. These influences will never end. After 3,000 years of literature on collapse and related phenomena, we cannot fail to be disappointed that 44% of collapse explanations answer the question “What causes collapse?” with the reply “Nothing in particular, just bad luck.” Surely we can do better. Acknowledgment I am pleased to express my appreciation to Walter Scheidel and Temis Taylor for comments on an earlier version of this chapter. References Adams, Robert M. C. 1981. Heartland of Cities. Chicago: Aldine. Bergin, Thomas Goddard and Max Harold Fisch, trans. 1948 [1744]. The New Science of Giambattista Vico (3rd edition). Ithaca: Cornell University Press. Binford, Michael W., Alan L. Kolata, Mark Brenner, John W. Janusek, Matthew T. Seddon, Mark Abbott and Jason H. Curtis. 1997. Climate Variation and the Rise and Fall of an Andean Civilization. Quaternary Research 47(2): 235–248. Boak, Arthur E. and William G. Sinnigen. 1965. A History of Rome to A.D. 565 (5th edition). New York: MacMillan. Brown, Lester R. 2001. 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Cowgill eds., pp. 44–68. Tucson: University of Arizona Press. 3 3.1 Introduction: The Iatrogenic Theory of Collapse Do societies lose resilience over time? Joseph Tainter’s theory of diminishing returns on complexity (TDRC) answers yes (Tainter 1988, 1995, 2011). The theory rests on four key points: • First, complex societies are problem-solving organizations that gain in socio-political complexity to address problems. • Second, increased socio-political complexity entails an energy cost. • Third, building socio-political complexity to solve problems eventually reaches a point of declining marginal returns. The costs of complexity grow faster than the benefits. • Fourth, the diminishing returns result in economic decline and popular disaffection, leaving a complex but vulnerable society, which is unable to cope with new challenges. Socio-political complexity, past a certain point, becomes “iatrogenic”: As with many medical treatments, the cure can become worse than the disease. Tainter defines collapse as a rapid, significant loss of an established level of socio-political complexity (Tainter 1988). For the purposes of this chapter, I define collapse in this case as the relatively rapid (within decades), significant, and enduring loss of population and physical capital, and an accompanied failure of the state (including its ability to maintain a monopoly on violence and taxation) and change in political identity. It is (at least historically) primarily an elite and urban problem, and one that can be less damaging, perhaps barely noticeably or even beneficial in some cases, for most of the population outside of palatial centers (Haldon, Chase, et al. 2020). It is a rare but real phenomenon in human history. Tainter focuses on two specific pathways that lead from diminishing returns to crisis. The first is economic decline: As societies lose their budget, they also lose their ability to respond to new crises. They lack a buffer of resources to address new shocks, whether they be invasion or climate change. The second Diminishing Returns on Extraction How Inequality and Extractive Hierarchy Create Fragility Luke Kemp DOI: 10.4324/9781003331384-5 38 Luke Kemp﻿ is mass disaffection and discontent. Non-elite workers are expected to do more and more for either the same, or less, benefit (Tainter 1988). TDRC is perhaps the foremost unifying theory of societal aging (a loss of resilience over time). There is much to admire in it. It meshes well with both human ecological work on socio-economic metabolism and complexity theory. It coincides with modern-day concerns about an “energy cliff” due to the declining Energy Return on Investment (EROI) (Hall, Balogh, and Murphy 2009) of fossil fuels, knowledge of tipping points (Lenton 2011), and provides a theory that is amenable to modeling. The emphasis that collapse is an (often adaptive) disaggregation into smaller political units is a point that both collapse proponents and skeptics can agree on. TDRC also echoes other emerging theories of societal collapse and resilience. Some have suggested through complexity modeling that increases in complexity can lead to a condition of “self-organized criticality,” which is precariously unstable (Brunk 2002). Others have pointed toward the accumulation of regulatory feedbacks over time as slowly engraining fragility in complex systems from the biological to the social (Anderies and Levin 2023). Most recently, empirical analysis using the Seshat Databank (Turchin et al. 2015) suggests that there could be a general scale threshold: societies need to develop greater information processing, such as writing, to move beyond a certain size. Some have even tried to develop a general biophysical theory and model of societal collapse based on Tainter’s hypothesis (Bardi, Falsini, and Perissi 2019). Yet, as a theory, it can be improved on by considering multiple factors of resilience and decay (Butzer 2012; Middleton 2012) as well as the role of politics and power. In this chapter, I revise TDRC to create a more nuanced, political, and empirical theory. I will begin by outlining some of the key problems with the theory, present a revised theory of “Diminishing Returns on Extraction,” and highlight how diminishing returns apply to the specific category of empires. In short, TDRC has a partly correct diagnosis, but faulty theoretical foundations. TDRC confuses complexity with hierarchy, and makes a problematic assumption that states are rational problem-solvers of collective problems with collective solutions. A more realistic picture is that states build capital, not complexity. Their problem-solving efforts address largely elite-selected problems with elite-derived benefits. Tainter is right to highlight diminishing returns on energy and resource extraction. For empires and expansionary states, this includes diminishing returns on conquest. For elites, this is accompanied by declining returns on economic development, inequality, corruption, and oligarchy. These drive intra-elite competition and further state capture, hollowing out the state. Eventually, the state falls alongside elites. The underlying dynamic is one of extractive political systems. All states are extractive in the sense of taking a certain share of resources from their populace. This exists on a spectrum, and extractive institutions here refers to those which are marked by more exclusive political arrangements, which result in decisions and resource distributions that disproportionately benefit a small elite at the expense of wider society. Collapse is a case of diminishing returns on extraction. ﻿Diminishing Returns on Extraction 39 3.2 The Problems of TDRC TDRC is elegant and compelling in its simplicity. Despite this, it faces several problems as a unifying theory of societal collapse. First, complexity is a vague concept and TDRC conflates its characteristics with the attributes of state hierarchies. If we use a more intuitive and sensible definition of complexity, it becomes clear that states increase complexity in some areas and decrease it in others. We should instead focus on capital, which is more easily, precisely measured and correlates with energy use. Second, different lines of evidence suggest that economic complexity and large-scale coordination do not require a state hierarchy. Third, states rarely efficiently and rationally address collective problems. Instead, efforts are often wasteful, avoid the most pressing problems, or are counterproductive. We should be careful not to naturalize or glorify the state and its problem-solving (Yoffee 2019). Fourth, states are not uniform in their political structure and goals. These differences lead to widely disparate levels of vulnerability and resilience. 3.2.1 Capital, Not Complexity Complexity in systems has several common characteristics, but no consensus definition. Key indicators often include the diversity and interconnectivity of parts, non-linear behavior, the presence of feedback loops, and scale. Socio-political complexity also lacks an official definition, but Tainter provides a useful one: “Complex societies are problem-solving organizations, in which more parts, different kinds of parts, more social differentiation, more inequality, and more kinds of centralization and control emerge as circumstances require” (Tainter 1988). This has some overlap with the typical notions of complexity, but differs most in its emphasis on inequality, centralization, and control (sometimes termed “information processing”). It is, rather, a closer description of hierarchy. There is a tension between complexity in the broad sense, and this definition of socio-political complexity. Scholars of complexity are split on what defines a hierarchy and its role in complex systems, particularly given its apparent tension with common ideas of emergence, self-organization, and distributed control (Lane 2006). Synchronized swarm behavior in schools of fish and flocks of birds are the more usual fare for complexity studies rather than topdown chains of command. I suggest we rely on a definition of complexity that aligns with its usage in the field of complex systems. Collective dynamic systems exhibit nonlinear and difficult-to-predict behaviors due to the interconnectivity and diversity of their constituent parts. Hence, the complexity of these systems can be defined and measured by this diversity and interconnectivity. Scale is an amplifier: it allows for greater degrees of interconnectivity and diversity. Measuring an overall level of complexity will be partly a subjective judgement. Agrarian states appear to have had a greater diversity in occupations and economic goods than stateless foragers. Stateless hunter-gatherers had more diverse diets, movement patterns, 40 Luke Kemp﻿ and individual skillsets (Scott 2017). Calculating an overall level of complexity will depend on how much we value the complexity of certain domains, and which ones can be tracked. I define states as centralized institutions that coercively extract resources from, and impose rules on, a territorially circumscribed population. Note that Tainter’s characteristics of complexity—centralization, control, and inequality —are fundamental markers of the state. They are not however, attributes of the more broadly used and common-sense definition of complexity (scale and interconnectivity of parts leading to nonlinear and difficult-to-predict behavior). Hence there appears to be a confusion between complexity and the state. Statehood does not exist as an on–off switch. It exists by degradations. This is particularly apparent in the earliest states such as Mesopotamian city-states and pre-dynastic Egypt (Stevenson 2016), which were marked more by varying, fluctuating degrees of centralization and hierarchy. Permanent coercive hierarchies did eventually rise, but it was not a single, clear causal trajectory. There were multiple pathways as well as reversals. This distinction between statehood and socio-political complexity is crucial. States should not be confused with complexity. They are a particular template for political organization that can reduce and increase complexity in different domains. The imposition of a state hierarchy has frequently shrunk rather than grown socio-political complexity. James C. Scott’s influential Seeing Like a State argues that state hierarchies simplify the world to make it legible and controllable (Scott 1999). A multitude of languages and dialects are replaced by a common standard tongue. The numerous contextual names of an individual are stamped out in favor of a single surname for purposes of taxation, census tracking, and conscription. That is, even though government bureaucracy and institutions may become larger, more interconnected, and more diverse, there is a decrease in the linguistic and social diversity. Often, resistance to such simplification and attempts to “shackle the leviathan” of the state (Acemoglu and Robinson 2020) are perhaps more likely to induce an overall increase in socio-political complexity rather than top-down homogenization. Capital is a more useful measurement for the TDRC. If we are interested in what states tend to accumulate over time to address new problems and what correlates to energy usage, then it is economic capital. I define capital in the same way as Thomas Piketty: A saleable, tangible, or intangible asset that can be owned and receives a monetary return1 (Piketty and Zucman 2014). This definition of capital only includes humans when they are traded as slaves. In pre-monetary societies, a monetary return can be replaced by a general material return based on exchange value. This provides a much more precise and measurable idea than broader notions of capital that includes social, natural, or human capital. Other forms of capital are more difficult to estimate over time and follow less simple trajectories. Take, for instance, social capital. One of the most famous definitions of social capital comes from Putnam, who views it as networks of relationships, trust, and norms that facilitate cooperation for mutual benefit (Putnam 1993). ﻿Diminishing Returns on Extraction 41 While other definitions vary, they share many of these common characteristics of interpersonal ties and norms such as reciprocity. While there are no deep historical measurements of social capital, it appears dubious that it has experienced the same exponential growth as economic capital has since the Neolithic revolution. The most recent evidence suggests that modern foragers have extensive networks of social relationships across bands and with non-kins. For many individuals, up to 90% of relations were not kin-based (Bird et al. 2019). This maintenance between tight, small-scale groups and much larger social networks suggests that in terms of social capital, modern and ancient foragers may not differ substantially from contemporary city-dwellers (Wengrow 2019). It is hard to definitively show that the Western Roman Empire was more diverse and interconnected than the Germanic “barbarians” to the North, with their multiple dialects, diverse customs, intricate overlapping social relations, and deliberative assemblies. It did, however, undoubtedly possess far more capital. Economic capital also more closely tracks what Tainter and others are most concerned about: Energy capture. Tainter has put forward the case that complexity precedes and drives resource and energy consumption (Tainter 2006b). This is not straightforward to address due to the ambiguity of defining, let alone measuring, complexity.2 However, the relationship between economic capital and energy use is clear. Most recent systematic reviews and evidence suggest that GDP, a decent proxy for levels of economic capital and activity, is innately tied to energy use (Hickel and Kallis 2020; Haberl et al. 2020). Complexity should not be confused with hierarchy. Hierarchies by nature are intended to simplify relations. States have likely made some areas of life, such as economic activity and bureaucracy, more complex while simplifying others, such as languages, measurements, ecology, politics, and many social practices. For understanding collapse and diminishing returns, it would be more prudent to focus on states and capital accumulation. Capital has an easily measured and proven relationship with energy use and leaves a clear archaeological footprint. Complexity does not. It is reflective of emerging evidence that complexity does not inherently need hierarchy, nor does problem-solving always need increased energy or economic capital. 3.2.2 Economic Complexity Without Hierarchy The idea that state hierarchies drove complexity is a standard narrative. Across the vast expanse of history, the rise of states has tended to result in undeniable, long-term trends of increasing energy capture, information processing, population density, and sheer population (Marcus 2008; Morris 2010). It remains unclear which of the variables drove which, including whether population scale and density pushed ecological exploitation and energy extraction (Ellis et al. 2018). These also are not synonymous with complexity. As noted earlier, stateless foragers likely possess greater complexity than large states in certain areas, including diets, individual skills, and ecology. 42 Luke Kemp﻿ Even if we narrow our lens to just the diversity and interconnectedness of economic activities, it is difficult to contend that complexity required state- level hierarchies. Scholars have recently challenged the state-complexity link, drawing on examples such as seasonal foragers in the Upper Paleolithic, early cities, the Celts, and nomadic pastoralists. Complex grave goods that would have required thousands of hours of work, monumental public works made of mammoth bones, megalithic stone works requiring coordinated workforces and detailed design (most famously in Göbekli Tepe), and seasonal variation between hierarchal structures and more distributed forager groups were present during the Upper Paleolithic (Wengrow and Graeber 2015). None of these should be conflated with complexity writ large; they are simply the most archaeologically visible proxies for certain areas of complexity. That is, they are useful proxies for the diversity and interconnectedness of forms of labor and economic activity, not of political practices, languages, or social relations. Many of the earliest cities display aspects of complexity (coordinated and interconnected labor, long-distance trade, as well as diverse jobs, skills, and social practices) without centralized hierarchy (Wengrow 1972). For the large, ancient city of Teotihuacan, evidence of egalitarianism has been sidelined due to the persistent belief that economic complexity and large-scale urbanism require centralization. This has led scholars to undertake mathematical modeling to prove an idea that should be uncontroversial: That large-scale cooperation in the city could have been distributed and self-organized (Froese, Gershenson, and Manzanilla 2014). In Mesopotamia, while the earliest states were “fragile and short-lived,” (Scott 2017) the cities they sought to conquer and bind were remarkably resilient (Yoffee and Seri 2019). Even when states did reign, the actual responsibilities of urban governance appear to have largely been decentralized (Van De Mieroop 1999). The Harappan is perhaps the most notable contradiction to the evolutionary state hypothesis. This cultural zone of settlements is exceptional in its size (encompassing multiple large urban sites), trade networks extending into Mesopotamia, longevity (at least 800 years during the “mature” phase), and slow decline over multiple centuries rather than abrupt collapse (Middleton 2017). Despite all this long-lasting urbanization and economic complexity, there is little evidence that it required a state-based hierarchy. As the most recent review of the evidence summarized: Urbanization, collective action, and technological innovation are not driven by the agendas of an exclusionary ruling class and can occur in their total absence. The priest-king is dead. The Indus civilization was egalitarian, but this is not because it lacked complexity; rather, it is because a ruling class is not a prerequisite for social complexity (Green 2020). These are provisional and contested findings. Such is true of much in ancient archaeology. Evidence of hierarchy could be archaeologically invisible, and absence of evidence is not evidence of absence. While further work is needed, it provides an important, promising data point. ﻿Diminishing Returns on Extraction 43 In the modern world, there also seems to be no iron rule that higher complexity requires more hierarchy. In Bali, the traditional, complex, and largescale water irrigation management system has existed since the eleventh century by not just operating outside of the state but deliberately evading state control (Wengrow 2017). There are similar long-lived, complex, and sustainable irrigation management structures in Amazonia, the Maya Lowlands, Angkor, and West Africa characterized by cooperation, heterarchy, and specialized occupations rather than hierarchy (Scarborough and Lucero 2010). These are notable since coordinated labor for irrigation was one of the original proposals for why states were a functional adaptation. The evidence suggests a more nuanced picture of the links between certain indicators of economic complexity and hierarchy. As archaeologist David Wengrow noted while drawing on the work of anthropologist Jack Goody: “[T]here was no universal or law-like connection between urban life, state sovereignty, and bureaucracy. These are instead parts of a distinct ‘package’ of developments that coalesced under a particular set of historical circumstances.” (Wengrow 2015) The exact relationship between these elements remains unclear. There is a still speculative, tenuous, and emerging picture that cities, trade, and specialization tend to have their roots in some particular, localized needs for integration. States and hierarchy were more frequently the outcomes of coercive efforts to capitalize on the opportunity presented by the large labor-grain concentrations that urbanism offered (Scott 2017). Trade preceded the flag, and the town square preceded the king. The earliest states often simplified many domains of life, a point that archaeologists have made for aesthetic labor (in the Neolithic Near East) (Wengrow 2001) and administration (Yoffee 2016). States frequently increased complexity in some domains while simplifying others. It is a complex picture (pun intended). 3.2.3 Broken Returns Viewing societies as problem-solving entities that build complexity to address new problems is enticing. It is alluringly simple and easy to model. But if we assume that states build complexity for problem-solving, the question arises: Whose problems and for whose benefit? This unravels into several problems. First, there is the issue that problem-solving often does not require increasing net complexity (or capital), and often would benefit from reducing it. Abolishing fossil fuel subsidies, for instance, would incur a range of benefits, not least of which would be tackling climate change, and overall would likely reduce at least bureaucratic complexity. Second, many problems are better addressed by reducing energy use. Energy efficiency would reduce overall energy demand, reduce emissions, and offer significant net-economic benefit (World Resources Institute 2014), particularly due to alleviating the health and productivity impacts of air pollution (Haines 2017). A new modeling exercise suggests that the world could meet the basic material needs of a population three times the current size by 2050 while simultaneously shrinking 44 Luke Kemp﻿ energy demand to the level of the 1960 (Millward-Hopkins et al. 2020). The idea that solving new problems inevitably requires increasing complexity, information processing, or energy (Tainter 2011) is fortunately wrong. That said, relentlessly accumulating and controlling capital does need energy and bureaucracy. Third, the problems that states seek to address often do not coincide with collective welfare. What problems were the mammoth undertakings of the construction of pyramids, ziggurats, or the Forbidden City attempting to solve? The most obvious answer is strengthening the legitimacy of the state and the claim of the ruler. It is harder to make the case that these led to improvements in collective wellbeing. Tainter does factor in popular disaffection, but this is tied to a declining return on energy investment resulting in overwork or over-taxation (Tainter 1988). Yet, throughout history, many rebellions and revolutions that have disrupted or upended states were built on legitimate grievances of inequality and oppression, as well as often being overtaxed and overworked (Lawson 2019). Fourth, hierarchies frequently avoid and actively ignore pressing problems, a fact that should be all too clear in the modern world of financial fragility and climate change. Indeed, there are entire books on “agnotology,” the intentional creation of doubt and ignorance by the powerful, whether it be by big oil, big tobacco (Oreskes and Conway 2010), or big pharma (Goldacre 2014). Some complex industries, such as advertising, seem to be largely devoted to creating problems (such as a lack of self-esteem) to stimulate demand (Hickel 2020). Swathes of modern jobs appear to be useless or socially harmful (Graeber 2018). The problems that states identify and act on are more often than not the product of power-elites, whose actions often reflect private more than public interest (Haldon, Eisenberg, et al. 2020). Fifth, states were never solely rational enterprises created to allow collective problem solving for the public good. The more likely story is that they were more often vehicles of bondage for elite benefit. Tainter does note that the truth of the origins of states likely lies somewhere between “integrationist” and “conflict” theories (Tainter 1988). Others have framed this as the “social contract” and “predatory” theories of state formation (Vu 2010). States do, of course, provide additional capacities and, on occasion, public goods, which has often led institutional economists to favor the integrationist theory. Despite this, the circumstantial evidence in the earliest states—punishment for flight from states, enslavement, wars of capture, and revolts—all suggest that centralized state hierarchies have tended to be coercive rather than enjoying widespread support (Scott 2019). As noted earlier, urbanism, trade, and specialization were likely “integrationist” to address local problems, but centralized states were the opportunistic, exploitative endeavor that often arose from the concentration of capital and people. The earliest states arose not just in areas where agrarianism (usually in floodplains) was easy, but also where easily taxable cereal grains or other sources of conveniently appropriated capital were present. They were coercive apparatuses: Walls were frequently about keeping the citizens in rather than keeping invaders out (Lattimore 1962; Scott 2017). Indeed, the geographical placement of early states in alluvial floodplain valleys suggests that the prevention of an escape route ﻿Diminishing Returns on Extraction 45 was critical to enacting the “cage of civilization” (Mann 1986). Many early laws and stratified administrations were not acts of complexity to address agreed collective action problems, but rather devices to allow for taxation, conscription, and, when needed, confiscation of property and capital (Scott 2017). This emphasis on control and coercion carries on to later states. The Hellenistic states were formed through sustained warfare marked by numerous atrocities in the wake of the break-up of the Macedonian Empire (Linklater 2016). Similarly, the earliest nation states in Europe occurred as aristocratic rulers looked to impose their authority domestically after setting their borders through warfare (Elias 2012). None of this is to say that warfare was the only source of state formation and bureaucratic centralization. Elite politics and ideology also played a role. But the apparatus of the state throughout history was primarily predatory. Until as late as 1800, up to three-quarters of the global population was likely held in some form of bondage (Hochschild 2006). All of this has underpinned a long history of citizen evasion and resistance against states (Scott 2008, 1990). In short, states have generally been macro-parasites on their populace. Or, as Olson termed them, “stationary bandits” (Olson 2000). Elites and states, particularly within empires, tend to have a tense but often symbiotic relationship in which the state provides stability and protection, while elites aid with local administration and extraction. This is neither inevitable nor an absolute rule. States tend to be wealthdestroying in the absence of meaningful political constraints (Murtazashvili and Murtazashvili 2020). One of the greatest triumphs of modernity has been the increased levels of accountability and limitations placed on states. Even in the past, with fewer restraints, states could provide public goods. This was especially the case when there were democratic constraints and a wide, balanced fiscal base across the population. It is, of course, in the short-term interest of state elites to appease the population enough to prevent rebellion and allow for long-term rent extraction. Sometimes, they were simply incidental. The roads of the Western Roman Empire were helpful for travel and trade, but they were originally built for the movement of the military to quickly reach battle fronts and put down rebellions. In most cases, the roads were constructed by the legionnaires for the legionnaires. This follows a long-term trend of empires generally aiding trade by providing protected transportation and communication infrastructure (Mann 1986). In cases where “good governments” were acting for the public good, there was still a tendency for eventual moral lapses and corruption to eventually result in extractive practices and decline (Blanton et al. 2020). Any theory of diminishing returns should account for the unequal distribution of returns. If states’ actions to build capital and grow are wasteful or counterproductive, then we can expect there to be less of a clear “Kuznets Curve” to energy and returns. It also means that there should be far greater flexibility for states to avoid and delay diminishing returns. That is, there should be significant scope for redistribution of returns and democracy in selecting the right problems to improve the return/cost ratio. State responses and resilience, after all, are just as important as contributors to collapse and decline (Butzer and Endfield 2012). 46 Luke Kemp﻿ This lens of empirical political economy can give firmer grounds for a theory of diminishing returns. Tainter does partly address this more political analysis of state collapse, commenting that: “[I]f exploitation and misadministration are normal aspects of hierarchy, then it is difficult to see these as sources for the collapse of hierarchies” (Tainter 1988). The exact same logic can be applied to TDRC: If energy capture and increasing complexity are normal parts of societies, then it is difficult to see these as sources for the collapse of complex societies. The reason why energy capture can be seen to contribute to collapse despite being a normal phenomenon is it changes over time. So do political practices and their returns. 3.2.4 Structure Collapse is best tied to clear, discrete political units such as states (Middleton 2017). However, TDRC has been applied to an array of societal forms beyond the state. As shown in Table 3.1, these societal forms range from non-state agrarian groups such as Rapa Nui (Easter Island), through collections of city-states or a cultural zone (the Lowland Maya), to sprawling empires (the Western Roman Empire). Notably, the case of the Rapa Nui was, according to the most recent evidence, not a case of endogenous ecocide and collapse, but rather colonization and slave raids (Hunt 2006; DiNapoli et al. 2020). It is fine to apply TDRC to different units of analysis, but we need to be clear why we think they are comparable and note the Table 3.1 An Overview of Theory of Diminishing Returns on Complexity (TDRC) Case Studies Case study Polity structureProxies of complexity used in studies (Non-exhaustive) noncomplexity contributors to collapse The Western Roman Empire3 Empire Currency debasement, army size, and territory Climate change,4 hostile migration, disease,5 inequality and elite overproduction,6 deforestation, diminishing returns from gold and silver mines The Lowland Maya7 City State Complex Monuments, population, and state of the land Climate change,8 warfare Cahokia9 Hierarchical Regional Polity Public works Climate change, deforestation Rapa Nui (Easter Island)10 Complex Agrarian- Forager Chiefdom Population, resource use Colonial slave raids and disease,11 deforestation due to Palm Rat infestation12 Chaco Canyon13 Hierarchical Regional Polity Public works Climate change, inequality. ﻿Diminishing Returns on Extraction 47 similarities and differences between them. For instance, diminishing returns on conquest is relevant to the case of an empire (and has been regularly used for the case of the Western Roman Empire), but is not pertinent for an isolated non-state agrarian group like the Rapa Nui. 3.2.5 Diminishing Returns on Extraction: A Theory of Hierarchical Decline Politics is a necessary ingredient for any accurate theory of social systems. For TDRC this means incorporating the problems of hierarchy. This shift can help integrate other key theories of collapse into TDRC. These include corruption, imperial overstretch (conquest), inequality, intra-elite competition (Turchin and Nefedov 2009), elite mismanagement (Blanton et al. 2020), an inability to address impending problems (Diamond 2011; Johnson 2017), and declining returns from technology and economic development. This approach also marries it to leading institutional theories of modern-day state growth and failure, which pinpoint extractive institutions as the key cause (Acemoglu and Robinson 2013; Acemoglu et al. 2003). I term this overarching idea the Theory of Diminishing Returns on Extraction (DROE). Hierarchies tend to increase economic capital over time, feeding inequality and corruption, pitting elites against one another, and constructing sclerotic institutions that struggle to address impending problems when they conflict with vested elite interests. As Tainter rightly notes, this is accompanied by diminishing returns on energy (although it does not always follow a straightforward trajectory). Economic and technological development also experience declining returns, although it is unclear how much of this is a natural phenomenon or how much is driven by state capture and elite mismanagement. For expansionist states, conquest also produces greater costs and fewer benefits over time. Below, I work through each of these contributors to DROE. 3.2.5.1 Conquest Conquest and military expansion are a natural impulse of an extractive hierarchy. It neutralizes threats, provides a new source of extraction, and can create domestic stability by providing an infusion of new resources. It can even be a necessary source of legitimacy. This was the case for the Chingissid world order created by Genghis Khan (and many subsequent orders), which depended on universal conquest and military success (Zarakol 2022). Yet, conquered territories require maintenance, and tend to create new enemies and frontiers of conflict. Conquests further afield from the core have even higher logistical costs. More resources are required by the military and diverted from productive sectors. All of this contributes to a pattern of diminishing returns leading to fiscal decline, and eventually fragmentation, or even collapse. This is the idea of imperial overstretch. An overreached leviathan faces spiraling costs to maintain its security and military advantage, eventually leading to relative economic, and then military, decline. This was common across modern empires, including the Spanish, Ottoman, Portuguese, and British. Both budget 48 Luke Kemp﻿ deficits and military spending increased until either fragmentation or decline set in (Kennedy 2010). 3.2.5.2 Corruption Elite mismanagement is a recurring motif in examples of societal decline and collapse. Typically, corruption and poor decisions from elites have been identified as a constraint on responses to crises, rather than the primary driver of decline. Two of the rare clear-cut cases of environmental overshoot— the Abbasid Caliphate and Third Dynasty of Ur—involved bungled responses from rulers (Tainter 2006a), alongside general state fragility. These factors were as much to blame as environmental degradation and, of course, contributed to ecological deterioration. Rife corruption was a consistent source of rebellion and even collapse throughout the history of imperial dynasties in China. In many cases, such as the Ming dynasty, the Mughal Empire, The High Roman Empire, and the Republic of Venice, even “good” governments that were providing public services often eventually drifted toward oligarchy and frayed the social contract, ending in decline (Blanton et al. 2020). In the modern world, the corrosive influence of corruption is becoming increasingly clear. As Mueller has shown, whistleblowing in countries such as the USA has reached a Golden Age not because of any renewed collective moral compass, but due to the sheer scale of fraud in finance, the military, pharmaceuticals, and government (Mueller 2019). 3.2.5.3 Economic Development Technology is a key driver of long-run economic development. This is both a key empirical finding and tenet of “endogenous growth theory.” Yet, there are signs that innovation and invention become more difficult over time. As the easiest, high-benefit discoveries and ideas are exhausted, scientists and entrepreneurs must expend more effort for incremental improvements. This appears to be the case in the USA where the average number of patents-per-inventor has decreased since the 1970s (Strumsky, Lobo, and Tainter 2010). One recent paper makes the case that ideas are getting harder to find. In the USA, research productivity is declining in almost all sectors. The rate of decline is around 50% every 13 years (Bloom et al. 2020). There are several different explanations for falling productivity on research investments. One could be that as the lowest-hanging fruit are already discovered, follow-on innovations simply require more investment and effort. Other reasons mesh well with the theory of diminishing returns on extraction. These include environmental and resource inputs becoming more costly, and industries suffocating innovation by adopting “defensive” research and development to protect their rent (Dinopoulos and Syropoulos 2007). This echoes other explanations for broader declining economic returns on productivity and profits due to wage ﻿Diminishing Returns on Extraction 49 suppression and elites redirecting investment away from productive sectors toward finance and coercion (Van Bavel 2016; Wallerstein 2000). 3.2.5.4 Inequality We now have an abundance of evidence for both the dynamics and corrosive impacts of economic inequality. In the presence of surplus capital accumulation and the intergenerational transmission of wealth, inequality tends to increase inexorably over time until a great act of violence—a “great leveller” of rebellion, mass-mobilization warfare, pandemic, or state failure—strikes (Scheidel 2017). In recent times, this is due to returns on wealth increasing more quickly than wages over time (Piketty 2017). There are also ideological roots, with each polity using ideology to explain, justify, and reinforce its inequalities (Piketty 2020). The amount of surplus capital and its disconnection from labor appear intricately tied to the level of inequality. This is supported by the markedly lower levels of inequality in the New World compared to the Old World, with the former lacking ox-drawn plows (Bogaard, Fochesato, and Bowles 2019). Wealth inequality has a well-documented connection to poorer mental health, higher interpersonal violence, and a suite of other social woes (Wilkinson and Pickett 2009, 2019). Inequality and corruption within hierarchies appear to have a bi-directional relationship: They often feed each other, creating a feedback loop (Gupta and Abed 2002; Policardo and Carrera 2018; You and Khagram 2005). As inequality increases, it places greater general stress on society, while corruption drains both the legitimacy of the state and its revenue. In short, societal fragility rises alongside wealth inequality and corruption. 3.2.5.5 Intra-elite Competition Cyclical change in structural demographics has been advanced as a quantifiable and predictable way of understanding and even forecasting socio-political violence (Turchin and Nefedov 2009; Goldstone 2016). While many historians loathe a cyclical theory, these ideas have proven impressive in back-casting and perhaps even forecasting numerous cases (Goldstone 2017). In short, population growth over time causes real wages to decrease (due to an oversupply of labor), rents and elites’ incomes to increase, and the number of elites to swell. This leads to rising inequality as well as “elite overproduction”: An oversupply of economic elites relative to high-status positions. This leads to intra-elite competition with aspiring elites fighting over scarce positions. While this theory is unlikely to be a panacea, or applicable to all cases, the potential for political and social turmoil to be spurred by struggling elites against a backdrop of inequality is persuasive. 3.2.5.6 Energy Return on Investment (EROI) Societies can be thought of as a trophic chain of energy. All material flows can be reduced to the basic universal currency of energy. Even grain, the basic 50 Luke Kemp﻿ constituent of tax and trade, is simply captured solar energy. The extraction of most energy faces a principle of diminishing returns where the most easily accessible and abundant sources are used first. Each marginal unit of energy extracted becomes increasingly costly: We need to go further abroad for land to cultivate and dig deeper for the next oil well. This is commonly measured by the energy return on energy invested (EROI). The EROI of fossil fuels has been steadily declining. The EROI of replacement renewable energy sources is improving but still lags significantly behind fossil fuels (Gupta and Hall 2011). This has led to fears of an energy cliff (Hall, Balogh, and Murphy 2009) or energy wall (Jarvis 2018) to growth. Since most activities can be converted to energy, the EROI can be thought of much more widely and include energy captured through conquest (booty, land, and slaves). Some have pointed toward this wider conception of EROI as the best indicator for TDRC and linked it to the case of the Western Roman Empire, which faced declining return on conquests as well as agriculture (Homer-Dixon 2008). There can be declining EROIs on agriculture due to environmental degradation as well as climate change. In the case of the Indus, the switch to more drought-tolerant crops meant lower yields, which was at least one (albeit likely minor) contributor to their de-urbanization (Petrie 2019). 3.2.5.7 Oligarchy and Broken Feedbacks Concentration of power and decision-making buffers elites from social and environmental change and often creates incentives to ignore unfolding problems. This is an endemic mark across many cases of transformation and collapse. In the Ottoman Empire, fiscal restructuring during a period of drought and climate change aimed to pacify local elites rather than alleviate the hardships of the farming base. This forced migration into cities caused social conflict and degraded the tax base. The empire knew that the farmers needed relief, but instead chose to please elites, severely contributing to the empire’s eventual demise. (Izdebski, Mordechai, and White 2018). Similarly, the decline of the Caracol city-state in the lowland Maya was as much about elite action (or inaction) as it was climate change. The state had previously faced drought, but this time, economic policies worsened inequality, triggering internal conflict (Haldon et al. 2018). The disregarding of environmental deterioration and the prioritizing of elite interests were as influential as environmental change. The practice continues today. CEOs and national leaders regularly practice “strategic ignorance” of corruption and ill practice within firms and governments to ensure legal nonliability and plausible deniability (McGoey 2019). In many cases, elite interests will lead to the proliferation of ineffective but bureaucratically costly policies. This is evidenced in modern-day environmental policy, which is marked by “treaty congestion” (Anton 2012) and regulatory bloat, with often limited effectiveness. Regulators want to placate the public with shows of action but avoid addressing the problems to assuage economic elites. Regulations multiply, but the problems remain unresolved. ﻿Diminishing Returns on Extraction 51 The robustness-fragility tradeoff (Anderies and Levin 2023) is inevitable in such a situation. Oligarchy, in this case, is largely synonymous with the idea of “state capture.” Elites use their wealth to buy political power, prevent regulation, and control the apparatus of the state. They are inherently conservative and seek to uphold the status-quo to protect their own interests (Van Bavel 2019). All of this prevents adaptation and degrades resilience. It is especially true when the most powerful industries engaging in state capture are also the ones creating the greatest risks that society faces. This is likely the case with both the fossil fuel industry and the “stalker complex” of big tech and intelligence agencies (Kemp 2021). In the language of systems thinking, oligarchy and elite decision-making tend to weaken and delay the information and motivation necessary to take corrective responses—the “negative feedbacks” that maintain equilibrium. Impending problems are either not seen due to hierarchy and bureaucracy, covered up, or actively ignored until it is too late. This is similar to a recent “social hubris” theory of collapse: That ancient societies frequently foresaw their demise but were too arrogant and/or proud to build resilience or adapt (Johnson 2017). The commonality is that responses are delayed, distorted, or averted due to vested interests and actions (Table 3.2). The phenomenon of diminishing returns on extraction can be summarized as: [I]nequality, corruption, intra-elite competition, impaired regulatory feedbacks Table 3.2 The Different Dimensions of Diminishing Returns Variable Dynamic Conquest Benefits can be dispersed across elites, commoners, and the state, depending on governance and inequality. Follows a trend of diminishing returns. Corruption Benefits accrue to elites, with costs shared across the state and commoners. Often increases over time alongside inequality. Economic Development Benefits can be dispersed across elites, commoners, and the state, depending on governance and inequality. Both technological and economic development appear to follow a pattern of diminishing returns. Energy Return on Investment (EROI) Benefits are usually dispersed across elites, commoners, and the state, depending on governance and inequality. EROI for environmental and resource extraction tends to decrease over time without significant innovation. Inequality Benefits accrue to elites with costs shared across the state and commoners. Increases over time due to dynamics of capital accumulation until a great leveler (or more rarely policy intervention) occurs. Tends to be driven further by oligarchy and corruption. Intra-Elite Competition Tends to increase cyclically over-time due to structural-demographic changes and changes in capital accumulation. Oligarchy and Broken Feedbacks Increases over time driven by inequality, corruption and in some cases, economic expansion (such as in the case of imperial immolation). The end result is state/regulatory capture. 52 Luke Kemp﻿ increase over time. These occur alongside diminishing returns on conquest (for empires in particular), energy and resource extraction, and economic development, eventually creating state capture, instability, fiscal drain, and fragility. Elites tend to take a larger share of extractive benefits until state decline or collapse sets in. Then, returns on extraction begin to diminish for elites as well, who depend on the coercive framework provided by the state. Most of the contributors to DROE have some form of diminishing returns, although with different returns to different parts of society. Inequality only truly provides returns to the elites. Eventually, even they suffer diminishing returns. Other dynamics identified here, such as economic development and innovation, can, in principle, bring broader benefits, but also tend to follow a pattern of declining returns. Each of these is interconnected. For instance, intra-elite competition is best thought of as an outcome of declining returns on inequality, EROI, and economic development. The important point is that the overarching theory of diminishing returns on extraction refers to returns for the state and economic elites. This is by no means a complete picture of state decline and collapse. It does not account for the early mortality that befell many states. The earliest states were tenuous constructs, and even today, many artificial states born of colonialism have proved to be brittle. As Yofee, McAnany, and Cowgill note, “concentrations of power in early civilizations were typically fragile and shortlived.” (Yoffee and Cowgill 1991; McAnany and Cowgill 2009) It should also be noted that any declining returns on energy and environmental extraction were often highly shaped by external factors. As noted above, the declining returns on crop yields faced by the Indus Valley population were the result of adaptation to climate change, rather than any law of diminishing returns. In the case of the collapse of the Akkadian Empire, the threat of advancing Amorite forces compelled the administration to work the cultivators so hard that most resisted or fled (Scott 2017). It is worth pausing here to address one of the most common critiques of “conflict” accounts of state decline. It is in the interest of elites and the state to maintain and provide for the welfare of the population they rely on (Tainter 1988). This assumes a long-sighted, rational view that few possess, and overlooks that state administrations and elites are often locked in competition within groups (intra-elite competition), between each other (corruption), and with other states. This heightens the pressure toward extraction. This competitive state creates a kind of “attractor state” where further exploitation faces less friction than remedying actions. For instance, efforts toward long-lasting distribution have always faced heated opposition throughout history and have almost always failed (Scheidel 2017). In contrast, worsening taxes or conscription are as regular as rain. Importantly, the empirical findings around the social degrading effect of inequality are not contingent on the standard of living, but rather on the relative level of inequality (Wilkinson and Pickett 2009). None of these factors—corruption, inequality, declining EROI, or weakened feedbacks—is intrinsic to complex social systems. Nor is hierarchy an ﻿Diminishing Returns on Extraction 53 inherent part of complex social systems. Instead, states face a range of diminishing economic, political, and environmental returns as they build capital through extraction. Each of these relationships—between capital accumulation and inequality, inequality and corruption, structural and demographic change, and inequality and broken feedbacks—is well-established empirically. It is largely a process of “politicide” (Scott 2017) that has often coincided with more external shocks such as climate change, war, disease, and natural disasters. Which effects predominate, and how long they take to arise, will vary by the extractive political form. Empires provide one clear and exemplary case of how diminishing returns on extraction occur given a particular political logic. 3.2.6 Imperial Immolation Empires present a societal structure that is particularly prone to one type of diminishing returns: Diminishing returns on militaristic expansion. Empires are large polities composed of previously sovereign territories and states that are formally and informally controlled to extract value (Doyle 1986; Taagepera 1978). This can be either through direct conquest of territory or effective economic control of resources. The latter has been the basis for branding the modern-day USA as a form of new imperialism (Harvey 2005). In both cases, the empire requires coercion for the extraction of value for the imperial heartland. It needs military power. Empires are run autocratically at a geopolitical level, and the main benefits of conquest tend to be concentrated. This is clear in Hobson’s criticisms of British imperialism: “Although the new Imperialism has been bad business for the nation, it has been good business for certain classes and certain trades within the nation” (Hobson 1902). There are, of course, spillover benefits to citizens more widely, especially those within the imperial core. The capture of the treasury of Macedonia in 167 BCE allowed the Western Roman Empire to eliminate taxes in Rome. Such benefits, whether they be in booty, captives, or new resources, tend to diminish as the costs of maintenance pile up, new wars become costlier, and enemies multiply. Imperial expansion tends to careen into fiscal decline, and eventually fragmentation or collapse. The thesis of Paul Kennedy’s Rise and Fall of Great Powers is that overstretch and an inability to maintain a costly military leviathan eventually lead to relative economic, and then military, decline (Kennedy 2010). This was common across modern empires including the Spanish, Ottoman, Portuguese, and British. Both budget deficits and military spending increased until either fragmentation or decline set in. Such a dynamic is also apparent in the Western Roman Empire, where economic problems were compounded by reforms over the course of the fourth century, in which the military and land taxes doubled while the bureaucracy swelled (Tainter 2015). In many of these cases, dwindling resources compounded the declining returns on imperialism. For Rome, silver and gold mines, particularly in Spain, required deeper, costlier excavation (Edmondson 54 Luke Kemp﻿ 1989). To make matters worse, industrial activity and mining were disrupted by the third-century crisis (McConnell et al. 2018). This was accompanied by intra-elite struggles, civil war, rampant inequality, and the eventual intersection of exogenous shocks such as climate change (Büntgen et al. 2016) and disease (Harper 2017) (although the severity of the Justinian Plague is questionable) (Mordechai et al. 2019). Corruption and elite mismanagement were present in key events during the decline of Rome, including the beginning of the Gothic War with the mistreatment of refugee Goths by Commander Lupicinus (Middleton 2017). All of the markers of diminishing returns on extraction were manifest in Rome, not just simply debt. As Walter Scheidel notes in a later chapter in this volume, the process of imperial decay in Rome fits fairly well with the theory of diminishing returns on extraction (Scheidel 2023). Understanding and studying this process of what I term imperial immolation will require a more detailed case study analysis and analysis of empires as a category. Notably, existing studies of the lifespan of empires (Arbesman 2011) based on data gathered from 3000 BCE to 600 CE (Taagepera 1978, 1979) suggests an ageless distribution. This may suggest that any theory of overreach is false as the risk of imperial disaggregation would, if such a theory were accurate, rise over time. However, the problem is that the data is confounded by cases of early conquest (even growing empires can be defeated before overreach sets it) and that it is ambiguous as to when the deleterious effects of imperial overreach set in. Importantly, empires can and do take corrective actions to avert decline, as was the case of the Byzantine Empire (Haldon, Eisenberg, et al. 2020). In short, more work is needed, but empires and the process of imperial immolation provide the clearest case study of diminishing returns on extraction. Empires are, after all, an extractive political apparatus. 3.3 Conclusions This chapter revises Tainter’s diminishing returns on complexity into a theory of diminishing returns on extraction. It is a broader framework with different foundations in how it sees complexity and problem-solving. Cases of decline and collapse typically involve stratified states. State gains in capital are not rationally or collectively decided; they are mainly a result of elite preferences. There are diminishing returns on energy and resource extraction, although these vary based on social practices and political forms. This is accompanied by declining returns for elites on corruption, economic development, inequality, and oligarchy, eventually leading to intra-elite competition. Conquest also undergoes a pattern of diminishing returns, although this is most applicable to empires (imperial immolation), and not necessarily generalizable to all states. Moving from complexity to extraction is not just a change in rhetoric. It shifts the frame in which we try to address the problem of declining societal resilience. The solutions no longer appear to be just in the domain of seeking new technical innovations to stave off diminishing returns on complexity, ﻿Diminishing Returns on Extraction 55 or the acquisition of new sources of energy to keep EROI high. Instead, it places the emphasis on institutional fixes. If the issue is diminishing returns on both social and environmental extraction, then the way forward is much more about social transformation: The implementation of deliberative democracy to improve negative feedbacks, the reduction of wasteful expenditure and regulation, the leveling of wealth disparities, the separation of wealth and political power, and potentially even economic degrowth. This could be viewed as cause for celebration: We are no longer doomed to frantically grasp for one technological stopgap after another in an unwinnable battle against an eventually diminishing EROI. Instead, societies can reach true, lasting stability if citizens can “shackle the leviathan” (Acemoglu and Robinson 2020) by building more inclusive institutions that are democratically proactive to emerging problems. Returns on energy and economic development will continue to be an important consideration, as will the wise and prudent use of resources to address genuine social problems, rather than elite capital accumulation. These are problems not of complexity, but of extractive political systems. Acknowledgment I would like to extend my gratitude to Miguel Centeno, Peter Callahan, Thayer Patterson, and Paul Larcey for the kind offer to participate in the Princeton symposium and this volume. Many thanks to Walter Scheidel, John Haldon, Zia Mian, Benjamin Hunt, Nathaniel Cooke, Catherine Richards, Haydn Belfield, Sabin Roman, Carla Zoe Cremer, and Tilman Hartley for their useful comments on earlier drafts. Notes 1 This paraphrases Piketty and Zucman’s definition of “capital” on pages 1264-1265. 2 If one defines or measures complexity by energy use, then it of course becomes a circular argument. 3 Tainter 1988; Roman and Palmer 2019; Homer-Dixon 2008. 4 Büntgen et al. 2016. 5 Harper 2017. 6 Turchin and Nefedov 2009. 7 Roman et al. 2018. 8 Aimers and Hodell 2011; Bazy and Inomata 2017. 9 Tainter 2019. 10 Roman et al. 2017. 11 DiNapoli et al. 2020. 12 Diamond 2011. 13 Tainter 1988. References Acemoglu, D., Johnson, S., Robinson, J. and Thaicharoen, Y. 2003. Institutional Causes, Macroeconomic Symptoms: Volatility, Crises and Growth. J. Monet. Econ. 50(1), 49–123. 56 Luke Kemp﻿ Acemoglu, D. and Robinson, J. A. 2013. 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[PARAGRAPH BREAKS RESUME]

4.1 Introduction

Around 2000 BCE, regarding the devastation of the Old Kingdom, Ankhtifi wrote:

The whole of Upper Egypt died of hunger and each individual had reached such a state of hunger that he ate his own children.

(Grimal & Shaw, 2001)

It must have felt like the end of the world—the end of civilization, humanity itself. This ghastly image had an echo 4000 years later, after the Trinity test in 1945 when humanity first gained the capability to end the entire human story, in Oppenheimer’s famous statement, quoting from the Bhagavad-Gita:1

I am become death, destroyer of worlds.

(Hijiya, 2000)

These statements are about two horrors: collapse in the first and existential risk in the second. Collapse and existential risk share many similarities, as among the worst things human civilization can do to itself. However, the two fields that study these topics—collapse studies and existential risk studies—have surprisingly few overlaps.

The field of collapse studies seeks to understand historical societal collapses. The chapters in this volume explore both particular case studies, such as the Late Bronze Age or the Western Roman Empire, and theoretical causal mechanisms and relationships, such as diminishing returns on complexity and elite overproduction. The field of collapse studies has tended to draw mostly on history and archaeology, with significant interest from complexity scholars and the social sciences more broadly.

Existential risk studies seeks to understand and mitigate events and processes that threaten the destruction of humanity’s longterm potential (Ord, 2020)— that could “either annihilate Earth-originating intelligent life or permanently and drastically curtail its potential” (Bostrom, 2002). It is particularly concerned, therefore, with human extinction and changes to humanity’s longterm trajectories. It has tended to draw more on the physical sciences (such as space, nuclear, biology, and machine learning) with significant interest from philosophers working on population ethics.

The histories of the two fields have several similarities (Beard & Torres, 2020). Both had early precursors (Gibbon, 1789; Shelley, 1826; Toynbee, 1934; Wells, 1897). In the post-war era, groups of concerned scientists such as the Club of Rome and the Bulletin of Atomic Scientists raised attention to both fields. In the 1990s and 2000s, both collapse (Diamond, 2005; Homer- Dixon, 2007; Tainter, 1988; Turchin, 2003) and existential risk (Bostrom, 2002; Leslie, 1996; Posner, 2004; Rees, 2003) experienced increased academic and popular interest.

In recent years, there has been some limited interaction between the two. For example, my own group, the Centre for the Study of Existential Risk at the University of Cambridge, is “dedicated to the study and mitigation of risks that could lead to human extinction or civilisational collapse.” In February 2018, I organized a Workshop on Modelling Societal Collapse with Prof. Jared Diamond. There has also been useful work done by the Global Catastrophic Risk Institute (Baum et al., 2019; Maher & Baum, 2013), and indeed the Princeton Institute for International and Regional Studies (PIIRS) Global Systemic Risk research community at Princeton University. However, this has been recent and partly motivated by a recognition of this very gap.

Yet overall, current collaboration is limited. The two disciplines rarely cite one another or attend one another’s conferences. Few academics, centers, research programs, and agendas, or seminar series and conferences cover both. Key topics from each field (such as system dynamics or anthropogenic risks) take time to travel across the two. This is strange for two relatively small fields that both study low-probability, high-impact catastrophic events, share certain methodologies and interests (such as complex adaptive systems), and could learn a lot from one another. Why do these two fields not collaborate more?

I suggest that a key reason for this apparent disconnect has been a remarkably sanguine attitude toward the prospect of recovery following a collapse of contemporary global civilization from leading existential risk scholars. This has contributed to, and been matched by, a relative lack of interest on the part of collapse scholars in recovery from a contemporary collapse.

There are many possible motivations to be concerned about a contemporary collapse. It would be terrible for the present generation. The suffering and death of billions would be an unprecedented tragedy. It would also be deeply unjust, as those in precarious situations in the developing world who have contributed least to the risk would likely be the main victims (Mitchell & Chaudhury, 2020).

However, a key motivation for many existential risk scholars is “longtermism,” the moral view that we should be particularly concerned with ensuring that the long-run future goes well (Beckstead, 2013; Greaves & MacAskill, 2019). This does not deny the suffering and death that would accompany a collapse. But it does say the most important thing is how the long run goes.

Longtermists have reason to be concerned, as the effects of collapse might not be limited to the present generation. If a collapse were “permanent” (Bostrom, 2013), it could lead to all future possible generations living in a worse state. At the extreme, collapse could lead to extinction, if humanity is unable to prevent natural risks such as asteroids or uses weapons of mass destruction (WMD). Extinction would mean that all future generations would never exist (Parfit, 1984). This betrayal of the future would also be a betrayal of the past. The unbroken chain of generations, each passing on the baton to the next—surviving, growing, and learning—would come to an end.2

However, many scholars are confident that collapse would not have these effects—that the likelihood of recovery is high. For example, in his new book that aims to be the standard introduction to the field, Toby Ord stated:

I think that even if civilization did collapse, it would likely recover.3

(Ord, 2020)

This view is shared by other leading scholars (Bostrom, 2002; Hanson, 2008;; Paul Christiano, 2018; Shulman, 2020). If collapse will likely be followed by a rapid recovery, then from a longtermist perspective it might not destroy humanity’s longterm potential. Collapse could be a regrettable, sad episode but zooming out, only a momentary blip—barely perceptible in humanity’s steady rise.4

Is this true? Is collapse not that important?

In this chapter, I argue that while a credible argument can be made for the likelihood of recovery, we should not be sanguine. Even from a longtermist perspective, a collapse could destroy humanity’s longterm potential. We cannot yet confidently rule out the prospect of permanent collapse or extinction— and we have good reasons to be concerned that a global civilization that recovered may have much worse prospects. In turn, I discuss the prospects for survival from a catastrophe and “technical recovery,” a concept I will introduce, before turning to what effect a collapse could have on our prospects. There is a kaleidoscope of contemporary collapse scenarios, depending on the hazards involved, scale, severity, and speed. The best this chapter can offer are some high-level considerations. Nevertheless, the central claim that collapse is not particularly relevant to existential risk is deeply questionable. Finally, I end with some suggestions for lessons the two fields could learn from one another, and for fruitful collaborations.

4.2 A Contemporary Collapse: Characteristics and Contributing Factors

The conceptualization of “collapse” is highly contested, but I use it to refer to a process of societal and political disaggregation (relatively rapid, over years or decades) to a less complex, enduring form, typically associated with economic loss, state collapse,5 and large-scale migration or death. It is the end of a particular complex form of social organization and cooperation. Most scholars across the two fields agree that a collapse of current global civilization is possible. By “civilization,” I refer to contemporary global society—the complex adaptive system formed by the interdependent economic, political, military, and cultural networks that link states and communities (Centeno et al., 2015). A “contemporary collapse,” then, would be a global process of disaggregation, to a fragmented, simpler form, likely accompanied economic loss, widespread state collapse, and large-scale migration or death

We could operationalize this in a number of ways. For example, the “social development index,” includes energy capture, urbanism, information processing, and war-making capacity (Morris, 2013). Other proxies associated with economic and technological capacity include population, gross world product (GWP), material culture production, percentage of people in various classes of occupations, or proxies for complexity such as trade, communication, and political and diplomatic contact over large distances. On a more normative dimension, one could also consider average and total wellbeing, healthy life years (Quality-Adjusted Life Years, or QALYs), the Human Development Index (HDI), the Genuine Progress Indicator (Kubiszewski et al., 2013), the Weighted Index of Social Progress (Estes, 2019), or percentage living in slavery or living in democracies. I will not specify particular proxies, as it is not central to my argument.

4.2.1 Characteristics of a Contemporary Collapse

What would a contemporary collapse look like? Too often, the assumption has been a simplistic, charismatic “return to foraging,” but this seems implausible.

It has become common in “big history” to separate human history into three stages: “foragers, farmers and fossil fuels” (Morris et al., 2015). While this may be defensible as a short summary of human history, it has contributed to simplistic visions of collapse. Writing on the prospects of a contemporary collapse has sometimes fallen into these simplistic terms, imagining progress simply reversed with humanity being “knocked back” to a “previous stage”— especially that of “hunter-gatherers”6 (Hanson, 2008; Mitchell & Chaudhury, 2020). Popular media (books and films such as The Road) have encouraged this imaginary.

However, historical collapses have rarely led to foraging. Foraging is a highly skilled lifestyle, and many areas are now unsuited to it due to human land use. Societies would not necessarily need to, or be able to, transition from farming and industry. The process of losing technological and manufacturing capacity—like the loss of the ability to construct monumental architecture in historical collapses—might be measured in decades or centuries.

Historical collapse is more often associated with deurbanization and a return to the fields, decentralization and state failure, disaggregation and local rule, and sometimes anarchy and violence—that is to say warlordism (McMahon, 2020). On a global scale, in the post-Industrial Revolution era, this would be unprecedented. However, there are some regional examples of industrialized societies that exhibit similar features—civil wars with state failure. Not all civil wars look like collapse. Some civil wars are concentrated in particular regions, with for example the capital being relatively untouched by violence—such as Angola, Sri Lanka, or Sudan. This can even be the case when warfare is widespread— during the Russian Civil War, several armies showed complex social organization. However, some civil wars have state failure and local warlordism. Possible examples include 1920s China, the Second Congo War, the Syrian War, the Somalian War, or the Afghanistan War. We can usefully consider these modern cases alongside pre-modern collapses such as Late Bronze Age or Western Roman Empire.

4.2.2 Contributing Factors to a Contemporary Collapse

What could contribute to a contemporary collapse? Collapse scholars have explored in-depth factors that contributed to historical societal collapses, and possible contemporary analogues of those factors. However, they have explored relatively less well new anthropogenic risks. Collapse studies is rooted in studies of agrarian societies, but contemporary society faces new, and potentially more concerning risks.

Collapse scholars have explored human factors, environmental factors, and factors associated with systemic structure and system dynamics. When discussing contemporary society, they have emphasized inequality, power centralization, and political polarization at the national level (intra-state), and fragmented global governance at the international level (Turchin, 2003). This has been placed in the context of climate change, resource depletion, the sixth mass extinction, and ecological tipping points (Diamond, 2005). The COVID- 19 pandemic has shown the potential of natural pandemics as a “shock” (Ehrenreich, 2020). Scholars have discussed network architecture and systemic characteristics such as tightly coupled just-in-time supply chains with little slack (Homer-Dixon, 2007). The position of critical nodes, such as transport links and reliance on a small number of “breadbaskets” has been emphasized, as have feedback loops such as between the food–water–energy nexus and conflict (Janetos et al., 2017).

However, collapse scholars have been more limited in their exploration of the unprecedented hazards and shocks contemporary society faces. Existential risk scholars suggest that, at a global level, in addition to the “natural” risks all previous generations have faced from asteroids and supervolcanic eruptions to climactic shifts, the current generation now faces a new class of anthropogenic risks. Since the beginning of the Anthropocene, human civilization has gained the ability to destroy itself: nuclear weapons, biological weapons, anthropogenic climate change, and risks from emerging technologies such as artificial intelligence (AI) or synthetic biology.

Existential risk scholars have been particularly interested in these unprecedented anthropogenic risks, which significantly raise the stakes of a contemporary collapse. These risks may dwarf those that previous generations faced. First, unlike earthquakes or famines, they are global in scope. Second, their severity may be worse. Humans as a species have a track record of tens of thousands of years of surviving natural risks (Ord, 2020; Sandberg, 2018). The track record of anthropogenic risks only lasts a few decades. This is captured by Lord Rees’ statement:

Our Earth has existed for 45 million centuries, but this century is special: it’s the first when one species, ours, has the planet’s future in its hands.

(Rees, 2003)

Risks from nuclear war (Xia et al., 2020; Scherrer et al., 2020) or anthropogenic climate change (Weitzman, 2009; Xu & Ramanathan, 2017) will be familiar to many. However, we now face a set of emerging risks that could also pose a significant threat: those around biotechnologies and AI.7 Rapidly advancing capabilities in these fields are likely to produce much social benefit but also raise new risks. Global governance for anthropogenic risks is limited and diffuse, with many gaps (Kemp & Rhodes, 2020).

One particular biotechnological concern is an engineered pandemic with a combination of transmission, incubation, and lethality much worse than that produced by nature (Adalja et al., 2018). This risk could emerge from state bioweapons programs (Carus, 2015, 2017), terrorist groups (Yuki et al., 2011), or accidental release from academic or corporate groups (Lipsitch & Inglesby, 2014). For example, a single postdoctoral researcher recently produced a complete synthesis of a horsepox virus, which is similar to history’s deadliest disease, smallpox (Koblentz, 2017). An engineered pandemic could threaten global society in a way that, for example, the 1918 Influenza (“Spanish Flu”) was unable to (Millett & Snyder-Beattie, 2017; Schoch-Spana et al., 2017).

Concerns with AI and machine learning can be categorized into safety, security, and structural concerns (Zwetsloot & Dafoe, 2019). Safety concerns are that as global society becomes increasingly dependent on increasingly advanced AI systems, accidents could be catastrophic (Bostrom, 2014; Russell, 2019). Security concerns include new physical, political, and cybersecurity risks from states and non-state groups (Brundage et al., 2018; Payne, 2018). Especially concerning are lethal autonomous weapons, those that can autonomously identify, select, and kill targets without meaningful human intervention or control (Boulanin & Verbruggen, 2017). These could be a new weapon of mass destruction (Russell et al., 2018), a concern raised by an Open Letter signed by over 3700 AI and robotics researchers and over 20,000 others (Future of Life Institute, 2015). Structural concerns include arms races, quicker escalation, destabilizing the geopolitical order, and destabilizing nuclear deterrence (Cave & ÓhÉigeartaigh, 2018; Dafoe, 2018; Geist & Lohn, 2018; Horowitz et al., 2018). These three categories all threaten global society.

A contemporary collapse is predictable and preventable. Contributing factors include those highlighted by collapse and existential risk scholars respectively. A collapsed state for global society might be characterized by state failure and warlordism—a general decentralization, disaggregation, and fragmentation.

4.3 Three Pathways from Collapse

In the previous section, we explored what could lead to a contemporary collapse, and the possible characteristics of the collapsed state. We now turn to what happens next. How could collapse destroy humanity’s longterm potential?

There are three ways collapse could permanently impact humanity, the first two of which are clear: if humanity went extinct during the period of collapse, or if humanity never recovered. The third is less clear, but by no means less worrying: that the global society that recovers could be much worse for humanity’s longterm potential. I will examine each of these outcomes (see Figure 4.1) in turn.

4.3.1 Extinction

One possible outcome of a collapse is that humanity goes extinct. A traumatized, fractured world population after a collapse maybe not be able to survive for long.

Collapse is a major risk factor—far greater, I would argue, than for example great power war. It increases the chance of extinction from a range of hazards. During the process of breakdown, WMD such as nuclear weapons or bioweapons are more likely to be used by states, or to fall out of state control.8 While in the collapsed state, humanity would be less able to respond to natural hazards (such as asteroid impact) or environmental hazards (such as climate change). In a disaster risk reduction framework, collapse increases humanity’s exposure and vulnerability to hazards, and reduces its resilience.

A contemporary collapse would differ from pre-industrial cases due to deepened interdependence, the existence of WMD, and the “hyperconnected, hypercomplex, hypercoupled” nature of modern society (Kemp, 2019a, 2019b). Humanity may have climbed high up a “rungless ladder”—while

[FIGURE 4.1 OMITTED]

historic societies fell only a small distance, modern societies may reach “terminal velocity.” Around 1% of the UK workforce is currently employed in agriculture (DEFRA, 2020). As Centeno et al. argue in Chapter 1 of this volume, unlike previous collapses where people could respond by either returning to the fields or “exiting” the territory (Hirschman, 1970), modern globalization means that there would be no simple escape from a global collapse. This unprecedented nature is most concerning. A single collapse could be one too many.

#### Degrowth JG mainstreams the sharing economy.

Brandon J. Unti 20, Economics Instructor, Bellevue College, “Money, Work, and Mass Extinction: Transformational Degrowth and the Job Guarantee,” University of Missouri - Kansas City, 2020, ProQuest

Sharing

Next to reduced hours the simplest, most obvious, and direct way of achieving reduced production and consumption, is to pursue institutions that expand opportunities for sharing. Employing Boulding’s framework for welfare, sharing allows us to increase the amount of satisfaction we receive from the existing capital stock while minimizing both consumption and production. In addition to its obvious impact on throughput, sharing has tremendous potential to build and strengthen community bonds. But what exactly is meant by sharing? And if it’s so wonderful why don’t we do it now?

With the aims of DG in mind, sharing in every possible form ought to be explored. This may include co-housing, work-sharing, expansion of commons, and public goods. On a more basic level, we can look to the existing institution of the library to understand how sharing might work. Except instead of limiting the function of the library to books, it should be extended to every possible good and service. The most obvious goods for library sharing would include those that most people use only at occasionally. Tools and recreational equipment are excellent examples of sharing models that currently exist on small scales. Many cities are now home to tool libraries, where community members can borrow tools to complete a project. Similarly, many university campuses offer recreational equipment libraries, providing students and community members access to a variety of outdoor equipment on demand.

It is easy to imagine expanding networks of sharing to include many more items from computers and electronics to cars and home appliances. In every case, sharing and the use of libraries offers great potential to reduce our production, consumption, and overall demand on the planet. First, and most obviously, if instead of everyone purchasing one of everything, we simply share a smaller pool of resources, fewer items need to be produced and sold. Second, and less obviously, when all of the tools, appliances, cars, and recreational equipment we need are available from a library, there is no need to store them in our homes. This would enable people to build and live in much smaller dwellings, reducing throughput for construction, heating and cooling.

Finally, libraries bring people together. They are hubs of community engagement, culture, and the diffusion of knowledge. It is easy to see tool libraries hosting courses on safety, crafts, and home-repair, or creating bulletin boards for people seeking volunteers to help with local construction projects. Similarly, as happens around existing recreational libraries, courses are offered teaching people how to use, maintain, and repair equipment, and group outings are organized to build community around shared hobbies.

So, where does a JG fit in? As in other cases, the JG contributes to the sharing economy in a variety of ways. First and foremost a JG overcomes the problem of unemployment. A significant commitment to libraries and sharing would be devastating to a capitalist economy. While it is obviously not necessary and—in light of the ecological crisis it is downright insane— that we all buy one of everything, the consequence of not doing so is economic crisis. As Krugman notes:

“There is one very powerful argument that can be made on behalf of recent American consumerism: not that it is good for consumers, but that it has been good for producers. You see, spending may not produce happiness, but it does create jobs, and unemployment is very effective at creating misery. Better to have manic consumers American style, than depressive consumers of Japan . . . There is a strong element of rat race in America’s consumer-led boom, but those rats racing in their cages are what keeps the wheels of commerce turning. And while it will be a shame if Americans continue to compete over who can own the most toys, the worst thing of all would be if the competition comes to a sudden halt” (Krugman 1999).

So, in this sense, the JG may be viewed as a prerequisite to the wide-spread adoption of sharing. Without something like a JG in place, sharing is not a socially sustainable option.

A JG may also be used to initiate or catalyze the sharing economy and the establishment of libraries. Construction and administration of libraries will create numerous jobs. Similarly, the maintenance and upkeep of library assets will require regular employees. Once again, a JG can and should offer employment carrying out precisely this type of work. It provides meaningful work, that serves local communities, while helping to foster social bonds, and reducing levels of production and consumption.

Finally, libraries and sharing networks can and should provide universal access to the community’s collective resources thereby serving the aim of equality. Just like existing libraries nobody will be forced to use them. This means the rich can continue to dwell in their private kingdoms of private ownership. However, it also means that the least well-off in society will have access to valuable resources they would otherwise be denied.

V. Conclusion

This chapter argues that the JG can serve as a platform for the multi-dimensional themes, strategies, goals, and policies of the DG movement. The reason the JG offers potential in this regard is owing to the unique space it occupies between TD and BU pathways of transition. This unique positioning means it can overcome a basic contradiction in the DG discourse between its fundamental structuralist orientation in terms of diagnosing crises, and its simultaneous overreliance on individual agency to address them. The JG is an amphibious approach calling on the power of government to expand the space for social deliberation, community autonomy, and individual choice. Indeed, it is argued that without first initiating macro-level institutional changes, many of the BU proposals called for are not feasible, scalable, or socially sustainable.

The JG is an example of how to overcome what Boonstra & Joosse identify as “the degrowth paradox.” The paradox begins with DG’s recognition that the drivers of the ongoing social and ecological crises are traceable to the structures and imperatives of a capitalist economy: “By singling out economic growth as the cause of ecological and social misery, degrowth blames the inner workings and logic of capitalism, since economic growth is the single mechanism that holds the capitalist system together” (Boonstra and Joosse 2013, 173). The problem is this. No proposal that is compatible with capitalism will be effective. What is required is a complete break from the system. But here is a “paradox; since it is a classic sociological insight that societies never start with a blank slate” (ibid.). The question then is “how a process of degrowth can materialize within capitalism.” This chapter proposes an answer in terms of Gorz’s strategy of non-reformist reform.

The JG is not a revolutionary proposal. It was conceived as a reform to achieve full employment and thereby stabilize capitalism. However, a JG also contains in it seeds for radical transformation. The purpose of this chapter is to highlight these radical seeds and transform them from potential unintended consequences into primary policy goals. The last chapter explained how the JG might be configured as a non-reformist reform, itself providing a pathway out of capitalism. This chapter explores further how the JG can serve as platform for the diverse and growing list of DG proposals. It demonstrates that a JG is not only consistent with the core philosophical themes of DG, in many cases, it may be a prerequisite to transitional strategies envisioned by the movement.

#### Sharing economy enables sustainable city growth---uptake is key.

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B. Impact of the Sharing Economy on the City

Cities and networks of prosperous city-regions have long been in the driving seat of the global economy. 163 With the advent of the sharing economy, cities, more than rural areas, will experience the initial economic effects of this new form of capitalism. 164 This Section provides an overview of the potentially transformative effects of the sharing economy. Sharing has indeed already started to leave its marks on the operation, structure, and nature of local government.

1. Transformative Effects

The challenges and opportunities of the sharing economy are currently transforming cities at different levels. First, the sharing economy is altering how urban residents live and consume. 165 This can be leveraged to produce positive externalities and promote social innovation, namely the empowerment of communities, through the value of sharing initiatives. 166

[\*1332] Second, sharing can help cities save costs, and studies indeed confirm the potential of sharing for local budgetary savings. 167 When the London borough of Croydon replaced its fleet cars with a Zipcar partnership, it cut staff car travel costs by as much as 40 percent. 168 Municipalities can also save resources through the sharing of heavy equipment with other local governments, which permits them to reduce overall expenditures and to have access to tools that would otherwise have been unavailable. 169 Munirent, for example - a platform that allows municipalities to lend equipment (e.g., trucks) to one other - is currently being used by multiple local governments in Michigan and Oregon. 170 Moreover, some cities have developed their own platforms, inspired by and adapted from existing commercial models. After banning Uber, for example, Seoul is working on the development of its own open source cab-hailing app. 171

Third, the sharing economy has the ability to render cities more attractive to certain categories of potential residents, recurrent visitors, and commuters. 172 For many, access to particular amenities, including goods and services the sharing economy provides, is the most important factor guiding their housing and location decision. 173 As some individuals value access rather than ownership and, consequently, possess fewer personal belongings, the demand for smaller housing units increases. 174 These phenomena require municipalities to revise their housing and zoning policies 175 and create [\*1333] incentives to increase car-and bike-share units. 176 Innovation generated by sharing can develop local economies. This is the idea behind local innovation districts with, for instance, shared workspaces. 177 "Sharing Districts" 178 or "Sharing Cities" 179 are expected to "foster innovation and the development of new business by encouraging collaboration and the sharing of ideas and knowledge." 180

Fourth, sharing practices have started to change how local services are being delivered, since some cities rely on the technology behind sharing platforms to fulfill traditional public tasks. 181 Berlin, for instance, relies on a platform to find housing for the increasing number of refugees that have arrived in its territory in the last two years. 182 This builds on private initiatives elsewhere in Europe that seek to match refugees with individuals offering free rooms in their homes. 183 In collaboration with San Francisco, Airbnb has created a new tool to allow fee-free accommodation listings that would be activated in the case of a natural disaster, such as an earthquake, in the Bay Area. The city is, accordingly, relying on the platform to provide emergency accommodation to its residents when an urgent need arises rather than attempting to fulfill the impossible task of doing so itself. 184 Moreover, more sector-specific local government operations are being inspired by the sharing economy, including transportation. As urbanites increasingly rely on bike-share, car-share, and parking-share schemes, local governments are compelled to adapt transportation policies. 185

[\*1334] Fifth, sharing practices can transform urban aesthetic and promote the development of historically neglected neighborhoods. The most noted example is Medellin, Colombia, which went from the world's murder capital under the Escobar Cartel to one of the most celebrated success stories of social urbanism. 186 By promoting collaborative reconstruction projects and shifting public investments to recover poor neighborhoods, places like Medellin and Seoul use esthetics and architecture as tools of social transformation and inclusion. 187 This spirit is also gaining ground elsewhere. San Francisco has created Living Innovation Zones that seek to improve and enliven public space through creativity and technology. 188

2. Potential Virtues

Sharing practices have already started to impact urban residents' quality of life and are expected to do so even more in the future. 189 Repair cafes, urban gardens, and various models of shared transportation facilitate their users' daily lives. 190

The sharing economy is, furthermore, assisting cities in operating on a more sustainable basis and improving their environmental record. The role of cities in addressing environmental concerns is ever more significant considering current urbanization levels. 191 Cities are important actors in sustainability not only because they are key sites of pollution but also because they offer potential solutions for more [\*1335] sustainable ways of human existence. 192 The sharing economy counters some of urbanization's most negative effects. 193 Walkable neighborhoods well-served by public transportation are believed to serve green objectives, contributing to the reduction of urban pollution. 194 In Denver, the city's bike-sharing scheme, B-Cycle, is estimated to have replaced 41 percent of car trips, and the Cleantech Group has found that Airbnb guests use 78 percent less energy than hotel guests, also reducing water consumption. 195

The German Association of Cities (Deutscher Stadtetag) believes that stationary car-sharing should be encouraged, as it reduces the number of cars on urban streets, creates space needed for other modes of transportation, and, in doing so, contributes to climate protection and urban quality of life. 196

IV. Cities as Regulators

In the United States and Europe, cities have not remained indifferent to new sharing practices. On the contrary, local governments are becoming the key regulators of the sharing economy. In 2015, already 40 percent of all American cities surveyed had regulated at least some aspects of sharing practices. 197 However, 58 percent of them do not have any form of specific home-sharing regulations and 59 percent do not regulate ride-sharing. As the U.S. National League of Cities found, cities can facilitate or restrict the [\*1336] implementation of sharing practices. This has local and global consequences, as municipal restrictions may impede the platform's ability to grow worldwide. 198

Local regulators are competent regarding many policy areas immediately affected by the sharing economy, such as transportation (for shared transport), food sales (for food-sharing), zoning, and hotel taxes (for house-sharing). 199 In the past five years, local regulators have been caught between demonstrations and interest wars and between traditional, licensed businesses and new market entrants, namely commercial and collaborative digital platforms. The European Union's Committee of the Regions has stressed that, given the potentially disruptive impact of the sharing economy at local and regional levels, subnational actors should regulate these practices. 200

While some cities have permitted sharing-economy platforms to operate without undertaking any legal action, others have adopted an explicit but minimal regulatory position. The next Sections provide an overview of the different regulatory approaches, distinguishing between cities like San Francisco, which permit home-sharing platforms (e.g., Airbnb) to operate but establish explicit limits to their operation, and cities like Berlin and Barcelona, which have adopted more restrictive approaches so as to limit the commercial capture of home-sharing platforms and the negative impact of the sharing economy on housing prices. 201 One of the interesting aspects of the restrictive regulation of home-sharing platforms is the fact that many cities (and national courts) have activated landlord-tenant regulations. This has occurred, for example, in the Netherlands in Rotterdam in 2015. 202 However, these practices appear to be closer to unlicensed hotels or bed-and-breakfasts, given the temporary character of most advertised leases.

Until now, most cities in the New and Old World have either tolerated or banned sharing-economy practices. This "tolerate-or-ban" dichotomy has affected both commercial platforms and genuine sharing practices, and it appears to result in the maintenance of a traditional approach to regulation that is typical of competitive, but not collaborative economies. This Part provides an overview of this [\*1337] regulatory dichotomy in a number of representative cities in the United States and Europe, clarifying the underlying reasons for their permissive or restrictive regulatory position on sharing-economy practices.

#### Extinction

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By the mid-twenty-first century the world’s cities will be home to approaching eight billion inhabitants and will carpet an area of the planet’s surface the size of China. Several megacities will have 20, 30, and even 40 million people. The largest city on Earth will be Guangzhou-Shenzen, which already has an estimated 120 million citizens crowded into in its greater metropolitan area (Vidal 2010).

By the 2050s these colossal conurbations will absorb 4.5 trillion tonnes of fresh water for domestic, urban and industrial purposes, and consume around 75 billion tonnes of metals, materials and resources every year. Their very existence will depend on the preservation of a precarious balance between the essential resources they need for survival and growth—and the capacity of the Earth to supply them. Furthermore, they will generate equally phenomenal volumes of waste, reaching an alpine 2.2 billion tonnes by 2025 (World Bank)—an average of six million tonnes a day—and probably doubling again by the 2050s, in line with economic demand for material goods and food. In the words of the Global Footprint Network “The global effort for sustainability will be won, or lost, in the world’s cities” (Global Footprint Network 2015).

As we have seen in the case of food (Chap. 7), these giant cities exist on a razor’s edge, at risk of resource crises for which none of them are fully-prepared. They are potential targets for weapons of mass destruction (Chap. 4). They are humicribs for emerging pandemic diseases, breeding grounds for crime and hatcheries for unregulated advances in biotechnology, nanoscience, chemistry and artificial intelligence.

Beyond all this, however, they are also the places where human minds are joining at lightspeed to share knowledge, wisdom and craft solutions to the multiple challenges we face.

For good or ill, in cities is the future of civilisation written. They cradle both our hopes and fears.

Urban Perils

The Brazilian metropolis of Sao Paulo is a harbinger of the challenges which lie ahead for Homo urbanus, Urban Human. In a land which the New York Times once dubbed “the Saudi Arabia of water” because its rivers and lakes held an eighth of all the fresh water on the planet, Brazil’s largest and wealthiest city and its 20 million inhabitants were almost brought to their knees by a one-in-a-hundred-year drought (Romero 2015). It wasn’t simply a drought, however, but rather a complex interplay of factors driven by human overexploitation of the surrounding landscape, pollution of the planetary atmosphere and biosphere, corruption of officialdom, mismanagement and governance failure. In other words, the sort of mess that potentially confronts most of the world’s megacities.

In the case of Sao Paulo, climate change was implicated by scientists in making a bad drought worse. This was compounded by overclearing in the Amazon basin, which is thought to have reduced local hydrological cycling so that less water was respired by forests and less rain then fell locally. This reduced infiltration into the landscape and inflow to river systems which land-clearing had engorged with sediment and nutrients. Rivers running through the city were rendered undrinkable from the industrial pollutants and waste dumped in them. The Sao Paulo water network leaked badly, was subject to corruption, mismanagement and pilfering bordering on pillage. Government plans to build more dams arrived 20 years too late. “Only a deluge can save São Paulo,” Vicente Andreu, the chief of Brazil’s National Water Agency (ANA) told The Economist magazine (The Economist 2014). Depopulation, voluntary or forced, loomed as a stark option, officials admitted. Although the drought eased in 2016, water scarcity remained a shadow over the region’s future.

Sao Paulo is far from alone: many of the world’s great cities face the spectre of thirst. The same El Nino event also struck the great cities of California, leading urban planners—like others all over the world—to turn to desalination of seawater, using electricity and reverse osmosis filtration (Talbot 2014). This kneejerk response to unanticipated water scarcity echoed the Australian experience where, following the ‘Millennium Drought’ desalination plants were producing 460 gigalitres of water a year in four major cities (National Water Commission 2008)—only to be mothballed a few years later when the dry eased. By the early 2010s there were more than 17,000 desalination plants in 150 countries worldwide, churning out more than 80 gigalitres (21 billion US gallons) of water per day, according to the International Desalination Association (Brown 2015). Most of these plants were powered by fossil fuels which supply the immense amount of energy needed to push saline water through a membrane filter and remove the salt. Ironically, by releasing more carbon into the atmosphere, desalination exacerbates global warming and so helps to increase the probability of fiercer and more frequent droughts. It thus defeats its own purpose by reducing natural water supplies. A similar irony applies to the city of Los Angeles which attempted to protect its dwindling water storages from evaporation by covering them with millions of plastic balls (Howard 2015)—thus using petrochemicals in an attempt to solve a problem originally caused by … petrochemicals.

These examples illustrate the ‘wicked’ character of the complex challenges now facing the world’s cities—where poorly-conceived ‘solutions’ may only land the metropolis, and the planet, in deeper trouble that it was before. This is a direct consequence of the pressure of demands from our swollen population outrunning the natural capacity of the Earth to supply them, and short-sighted or corrupt local politics leading to ‘bandaid’ solutions that don’t work or cause more trouble in the long run.

Other forms of increasing urban vulnerability include: storm damage, sea level rise, flooding and fire resulting from climate change or geotectonic forces; governance failure, civic unrest and civil war exemplified in Lebanon, Iraq and Syria over the 2010s; disruption of oil supplies and consequent failure of food supplies; worsening urban health problems due to the rapid spread of pandemic diseases and industrial pollution and still ill-defined but real threats posed by the rise of machine intelligence and nanoscience (Gencer 2013). The issue was highlighted early in the present millennium by UN Secretary General Kofi Annan, who wrote:

Communities will always face natural hazards, but today’s disasters are often generated by, or at least exacerbated by, human activities… At no time in human history have so many people lived in cities clustered around seismically active areas. Destitution and demographic pressure have led more people than ever before to live in flood plains or in areas prone to landslides. Poor land-use planning; environmental management; and a lack of regulatory mechanisms both increase the risk and exacerbate the effects of disasters (Annan 2003).

These factors are a warning sign for the real possibility of megacity collapses within coming decades. With the universal spread of smart phones, the consequences will be vividly displayed in real time on news bulletins and social media. Unlike historic calamities, the whole world will have a virtual ringside seat as future urban nightmares unfold.

### Degrowth ADV

#### Advantage two is DEGROWTH

#### Growth drives are colliding with planetary boundaries. This will cause ecological overshoot and destroy life on earth.

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4.1 Introduction

In the aftermath of the 2007–2009 global economic recession, there has been an active policy debate centered around what policies could restore economic growth. Should the government expand aggregate demand and directly increase employment? Or, should austerity and other neoliberal policies be imposed to reduce overall debt and deregulate markets in order to make economies more “competitive?” Advocates of the latter approach have claimed that the unusually high levels of government debt in many countries restrict policy options, and only the latter approach can restore economic growth and full employment. On the other hand, Post Keynesians and Modern Monetary Theorists (MMT) argue that government debt does not prevent governments from increasing expenditures by means of monetary expansion when there is high unemployment, and expansionary fiscal and monetary policies can indeed effectively restore economic growth. Advocates of these seemingly opposing policy prescriptions effectively argue about which of two approaches are more likely to restore economic growth. A realistic assessment of the scientific evidence on climate change, biodiversity losses, and natural resources clearly shows that both schools commit the same fundamental error: environmental constraints make it impossible for any macroeconomic policy to “restore” the economic growth we have experienced over the past two centuries.

We cannot continue to expand the human ecological footprint as we have over the past 200 years. Scientific evidence, continuously and comprehensively updated and analyzed in a sequence of reports by the Intergovernmental Panel on Climate Change (IPCC), clearly shows that atmospheric temperatures are rising, and the cause is almost certainly the growth of human activity.1 It is also evident that we are losing the biodiversity that safeguards our existence, and many of the services of nature on which human life depends are deteriorating due to overexploitation. In sum, the last 200 years use of carbon-based fuels, the tenfold growth of material consumption per person, and the concurrent growth of the human population to over seven billion persons are together causing massive environmental degradation.

While it is true that a mixture of austerity (government budget cuts, dismantling of the social safety net, privatization of public assets, lowering of labor costs) and stimulative economic policies (some tax cuts and very aggressive central bank injections of reserves into the banking system) have “restored” some traditional economic growth in the United States after the 2007–2009 crisis, it is also obvious that eight years after the recession ended wages remain stagnant, labor force participation rates have declined, nearly all gains from growth have gone to the highest 10 percent of income earners, and government debt remains high. And, in Western Europe, economic growth has been near zero since the 2007–2009 crisis, unemployment still exceeds 10 percent, and government deficits have not been reduced. There are, therefore, calls for a shift in policies that can better induce economic growth. The policy shift in Europe is clearly towards neoliberal policies, however, and concern for the environment has diminished as the economic crisis has dragged out. For example, the Socialist government of France defied the voters in 2013 and negotiated a “stability pact” with the national business organization MEDEF that included lower taxes on business, lower labor costs, reductions in the French social safety net, and deregulation of business and labor markets. In 2014, the socialist government introduced its “Loi Macron,” named after the openly neoliberal Economics Minister, that reduced protections of labor, Sunday opening of retail establishments, and the deregulation of many sectors of the economy. In 2017, Macron was elected President.

At the same time, there is some pushback against austerity policies in countries where those policies have been implemented. But, while the political debates and social conflicts triggered by austerity policies have captured everyone’s attention, no one on either side of the debate seems to have noticed that even the weak economic post-recession growth continues to cause carbon emissions and environmental degradation to increase further. For the first time, the 400 mark in carbon particles per million in the atmosphere was surpassed in 2014.

4.2 The Ecological Consequences of Growth that Economists Choose to Ignore

Scientific evidence shows that humanity’s footprint on earth is causing rapid climate change, ocean acidification, mass extinction of living species, disappearing land cover, degradation of freshwater resources, disruption of the nitrogen and phosphorous cycles, and many other transformations of our ecosystem. A study by Mathis Wackernagel and associates (2002) estimated that humanity’s exploitation of the Earth’s resources corresponded to 70 percent of capacity in 1961, but grew to 120 percent in 1999. A few years later, the World Wildlife Fund (2008, p. 2) estimated that “humanity’s demand on the planet’s living resources … now exceeds the planet’s regenerative capacity by about 30 percent.”2 The WWF estimated that the human population began using nature’s services at a rate that exceeded the capacity of the Earth’s ecosystem to replenish itself some time during the 1980s.

Humanity’s efforts to compensate for the stress on nature’s services and the depletion of non-renewable resources often made things worse. The so-called Green Revolution that increased the amount of food produced per acre during the latter half of the twentieth century has caused numerous stresses in society. The rapid substitution of machines, chemicals, and an industrial-like organization of agriculture has destroyed traditional rural communities and displaced hundreds of millions of people. The consequences show up in the form of growing urban slums, mass illegal immigration, broken family structures, and greater income inequality. Modern agriculture, among all sectors of the economy, is the single largest contributor to global warming, even larger than transportation and power generation.3 And, the growth of monoculture, the large-scale capital-intense production of single crops covering vast territories formerly devoted to much more varied agricultural production, is the main contributor to the loss of biodiversity. Magdoff (2015) explains that the shift to monoculture is motivated by economies of scale, which are derived from the substitution of large equipment for labor, the heavy application of chemical fertilizers and insecticides in place of more labor-intensive and varied exploitation of the land, and industrial food processing operations in which machinery and assembly-line methods require uniform products. Friedman (2015) warns that the rapid development of genetically modified organisms (GMOs) will further upset the natural processes of our ecosystem in ways that cannot be managed with any reasonable degree of accuracy.

Also, among humanity’s efforts to develop alternative sources of energy are biofuels projects such as ethanol produced from corn and sugar cane, which require vast amounts of land and water. Biofuels have also directly contributed to the expansion of monoculture. For example, in Brazil lands have been brought under production, including forests, to expand the production of sugar cane that serves as the raw material for producing ethanol fuel. Ominously, the expansion of cane sugar production has pushed cattle and other types of agriculture into the Amazon basin, the huge region that is the Earth’s largest carbon sink. At the same time, efforts to exploit new sources of petroleum are even more environmentally damaging. For example, the conversion of tar sands into petroleum requires large amounts of energy to “melt” the tar, and this use of energy to create more energy not only adds new carbon emissions to the ultimate carbon emissions from using a liter of gasoline, but the processing of the tar sands also pollutes a large area of one of Canada’s largest river basins. And, the environmental consequences of new drilling methods such as “fracking” are still unknown, but the massive use of dangerous chemicals, the creation of earthquakes, and the likely escape of large amounts of methane into the atmosphere has led some countries to ban the process. Finally, the dirtiest of carbon sources of energy, coal, continues to be exploited because the market price of coal reflects only a small fraction of the total social cost of burning coal for fuel.4 For example, large-scale coal production causes mountain top destruction and irreversible river pollution in Kentucky and West Virginia in the United States.

The growth of economic activity has also caused social conflicts and oppression. The growing demand for material output has in recent years triggered wars over oil supplies in Kuwait, Iraq, and Georgia, threats of war by petroleum importers such as the United States against oil producers like Iran, Venezuela, and Ecuador, and there have been civil wars in more than a dozen African countries for control of assorted natural resources. The continued violence in the Niger Delta of Nigeria is driven by the extreme poverty that exists side by side with the oil industry. Large countries such as China, the United States, Russia, and others are actively engaged in a military arms race in order to expand and maintain their control over the world’s scarce resources. Several countries, among them Iran, Pakistan, and North Korea, have developed or are seeking to develop nuclear weapons to protect their carbon resources. International economic integration has disrupted traditional societies and their customary economic relationships. Economically driven social stresses manifest themselves in many ways, including the long-distance international migration of large numbers of people, rising income inequalities within most of the world’s countries, and actual hunger for one billion of the world’s seven billion people.

In sum, our capitalist economies have brought about technological changes, just as predicted by neoclassical growth theory outlined by Solow (1956, 1957), and elaborated more recently by Romer (1990), Grossman and Helpman (1991), and Aghion and Howitt (1992). However, these technological changes induced by increased energy use and population growth have resulted in a more intense exploitation of the ecosystem rather than a mitigation of the environmental destruction. Human society thus remains on a dynamic path of complex and interrelated economic, social, and environmental changes that are not sustainable. The long-run costs of our current production are much higher than current market prices suggest.5 This destructive technological reaction has led scientists such as James Lovelock to warn that our very human existence is in danger: “It is not the Earth that is threatened, but civilization.”6

4.3 Economists’ Failure to Deal with the Environment

Most academic and virtually all private financial sector economists failed to see the “dotcom” bubble that was quite obvious to heterodox economists and casual observers in 2000, and those same economists then failed to see the equally obvious sub-prime real estate debt bubble that burst in 2007. Today, we see economists missing what overwhelming scientific evidence suggests is an even more dangerous ecological exploitation bubble. Even many Post Keynesians who understand the causes of the earlier business bubbles openly push for more government spending to employ people to build roads that will encourage building more automobiles, more airports that will facilitate even more jet travel, and more ports that will facilitate the shipping of food and resources across the globe. As a politically convenient response to austerity-prone conservatives, economists of other schools, such as Post Keynesian proponents of directed fiscal policies, often fall back to accepting tax cuts for corporations to spur investment in factories and income tax cuts to spur more consumption, not unlike President Obama’s 2009 $787 billion stimulus program consisting mostly of income tax cuts and highway construction programs. There was almost nothing in that program to spur the fundamental restructuring of the economy towards long-run environmental sustainability.

The failure to anticipate slowly unfolding ecological disasters is, unfortunately, not as surprising as it may seem from an ecological perspective. Psychologists have pointed out that favoring the present over the future is perfectly reasonable human behavior from an evolutionary perspective. After all, humans exist today because their ancestors were good at quickly focusing on immediate problems, such as dealing with the bear at the mouth of the cave or the finding the next meal rather than being distracted by deep abstract thoughts about the future of humanity. Thus, we could excuse economists for being human when they focus on immediate problems while ignoring long-run issues. However, as professional social scientists, shouldn’t economists provide an unbiased objective assessment of the future?

We should note that some economists did foresee the dangers of financial bubbles. For example, Thorstein Veblen (1904) warned us about financialization (the separation of financial activity from the real economy) more than a century ago. A couple of decades later, John Maynard Keynes (1936, Chap. 12) explained in detail why uncertainty will occasionally, and inevitably, cause financial markets to disrupt real economic activity, and Hyman Minsky (1978, 1982) elaborated further. But, disturbingly, these perceptive economists were pushed out of mainstream economic teaching and thinking by the dominant “marginalist” neoclassical way of economic thinking, to the point that today mainstream economists lack the analytic tools to deal with the danger of financial instability.

It is important to note that this bias in economic methodology has not been accidental. Because economists are the principal spinners of stories that people rely on to make sense of their economic situation, there is a clear motive for the vested interests of high finance to induce economists to develop a research program (neoliberalism) and use a modeling framework (neoclassical marginalism) that put the capitalist system in an unrealistically positive light. Wisman (2013, p. 922) points out that financial and business lobbyists and public relations officers actively manipulated the economics culture in order to induce economists to furnish “… support to free-market ideology, thereby lending ‘scientific’ support to right-wing policies.” In this regard, the former chief economist of the International Monetary Fund (IMF), Simon Johnson (2009), recently explicitly wrote that the financial industry “gained political power by amassing a kind of cultural capital—a belief system,” the result of which was that “faith in free markets grew into conventional wisdom ….”

The same thing seems to be happening with regard to how economists deal with environmental problems. The economics profession today finds that the neoclassical models that are taught as having universal applicability to all economic issues effectively deprives them of the tools (i.e., models and methodology) that would lead to more realistic and urgent conclusions about our environmental situation. The neoclassical economic models we use assume all economic activity passes through the market system, but the natural environment most often interacts with human economic activity outside organized markets. This is the reason that prices of coal, oil, and gas are such poor measures of their true long-run costs, as documented by, for example, Diaz and Moore (2015) and Shindell (2015). Consequently, the environmental effects of economic activity are ignored when we use those models to analyze issues and economic policies. And, by ignoring real environmental constraints, we are biased towards concluding that restoring economic growth is the best way to reduce unemployment.

#### Energy, ore grades, forests, water, soil, geopolitical and social instability, and increasing energy requirements of managing complexity are all coupled to GDP and guarantee near-term collapse under growth.

Ted Trainer 21, retired from University of New South Wales, “Degrowth: How Much Is Needed?,” Biophysical Economics and Sustainability, vol. 6, no. 2, 05/17/2021, p. 5

Abstract

The considerable literature on Degrowth has focussed mainly on the case for it and on elements of a desirable new economy. Little attention has been given to the magnitude of the required Degrowth, and the common implicit assumption is that it would not be very great, enabling a desirable economy to be achieved by reforms within the existing economy. The following discussion argues that this is mistaken and that the reductions must be so large that they cannot be implemented within the existing structures and must involve extremely radical system change. Implications for the form that a sustainable and just society must take and for the way it might be achieved it are explored.

Introduction

The possibility that economic growth might constitute that a sustainability problem has been recognised for many decades but until recently has received little attention. However, since the 1990s, there has been a remarkable surge in attempts to get the issue on the agenda and there is now a considerable literature arguing the need for Degrowth. Understandably the discussion has focussed on elaborating the case that Degrowth is necessary and has given little attention to the amount that might be necessary or the form that a society that has undergone sufficient Degrowth must take, and less to the means by which it might be achieved. The argument below is that rich world per capita levels of resource use and environmental impact, and thus levels of production and consumption, and thus, GDP would have to be cut to less than 10% of current levels.

Most if not all, current discussions do not recognise that the task is of that magnitude and consequently they proceed as if reductions within the present basically industrialised, globalised, urbanised, market led, capital and energy intensive system will be capable of achieving sufficient Degrowth. It will be argued that this is incorrect and that an extreme transition to radically different systems will be necessary. This in turn sets immense theoretical and practical problems regarding goals and strategy.

The Magnitude of the Degrowth Task

Following are some of the reasons and evidence supporting the claim that the required Degrowth must be far greater than is commonly assumed. The general logic is to examine various measures of consumption in high-income and low-income countries in order to estimate the increase in present global aggregates that would result if all were to rise to present rich world per capita levels. The reference is to a global population of 9 billion in 2050, which is probably lower than most estimates. (For instance, Bradshaw et al. (2021) assume 10 billion, the UN Department of Economic and Social Affairs estimated 9.8 billion in 2017 and in 2019 suggested that it could rise to 11 billion.)

GDP Per Capita

The main evidence referred to below is to do with resource and environmental impact rates but GDP can be taken as a loose overall representation of the amount of consumption taking place. For instance, it correlates closely with energy use, and Weidmann et al. (2014) report a close correlation with materials use. If 9 billion people rose to the present Australian level of per capita income, around $50,000 p.a., the total world income would be around $450 trillion, approaching six times the present amount. Yet the World Wildlife Fund (2019) estimates that the present amount of resource consuming going on is 1.7 times a sustainable amount. (The figure is also given by Bradshaw et al. 2021, the UN Department of Economic and Social Affairs estimated 9.8 billion in 2017 and that it could reach 11 billion in 2019). This indicates that by 2050, the amount would be over 10 times a sustainable level.

The 1.7 multiple has been disputed, primarily because approximately half the Footprint is due to the inclusion of ecological resources required to deal with carbon emissions. The significance of this point depends on expectations regarding how effectively the emission problem can be dealt with, e.g. by shifting to renewable energy sources. That issue is quite unsettled and there is a considerable literature doubting the possibility of 100% renewable energy supply. (For instance, Clack et al. 2017, Trainer 2017, Moriarty and Honnery 2012, Michaeux 2016, Mahoney and Honnery 2017, Capellán-Pérez et al. 2020, de Castro and Capellán-Pérez 2020, Heard et al. 2017.) The uncertainty over the issue is to be borne in mind but the multiple can be taken as an indicator of a significant overshoot that it might not be possible to reduce significantly.

Resource Consumption

Although at times comparisons in this area cannot be precise due to differing definitions of “poor”, “underdeveloped”, “low income” etc. countries, the following references indicate significant differences. The UN's International Resources Panel reports that per capita material footprint in high-income countries is more than 13 times the level of low-income countries. (United Nations International Resources Panel 2019 p. 5) “…overall, the wealthiest 20 per cent of the world’s population consume 80 per cent of resources such as water and land. By contrast, the poorest 20% do not have enough to meet their basic needs—and account for just 1.3% of global resource consumption”. Wiedmann et al. (2015, Fig. 1) found that the Australian “Materials Footprint” is 9 times that of India. Wiedmann et al. (2014) estimate that the top five consumer countries consume 62% of iron ore and 47% of bauxite. The figures given by Soderstein (2020) indicate that OECD vs non OECD per capita consumption ratios are, for biomass 13/1, fossil fuels 7.4/1, metals 7.1, and minerals 6.4/1, meaning that the ratios for rich vs poor countries would be higher.

Recent studies have shown that previous measures of Material Footprint can be significant underestimates, first because they usually reflect only net quantities used and, thus, do not take into account the significant quantities of materials that are processed in Third World exporting countries for each unit exported. (Wiedmann et al. 2015 discuss this point). Second, previous estimates have tended not to include the resource costs embodied in the capital-intensive infrastructures that must be built to produce and export materials. Soderstein (2020) has estimated that including these can increase total quantities by up to 162%. Wiedmann and Lenzen (2018) arrived similar findings.

Note that most of the above references have been to present per capita resource use, but these rates are expected to increase significantly. The UN estimates the global average will be 110% higher by 2060. (United Nations International Resources Panel 2019, p. 27). Taking this factor into account would increase the basic multiple.

Energy

The wealthiest 10% of the world’s population consumes about 20 times as much energy as the poorest 10% of the world’s population. (Wiggins 2020). US per capita consumption is 14 times the Indian and African averages. (Akanonu 2019.) For the world’s population to rise to the present US per capita primary energy consumption of around 330 GJ/y world production would have to be multiplied by almost 5.

Carbon Emissions

In 2015, Oxfam released a study (Colarossi 2015) which found that the richest 10 percent of people produce half of the planet’s individual-consumption-based fossil fuel emissions, while the poorest 50 percent, about 3.5 billion people, contribute only 10 percent. This is a per capita ratio of 25/1. Bueret (2019) provides similar summary figures, as does Tukker (2014) who says “… the top 5 emitters together were responsible for more than 52% … of GHG emissions. The 100 countries emitting the smallest absolute amounts of GHG together accounted for a miniscule 1.6% of the global carbon footprint”.

Environmental Impact

Wiedmann et al. (2020) report that the world’s top 10% of income earners are responsible for between 25 and 43% of the global environmental impact. In contrast, the world’s bottom 10% income earners cause only around 3–5% of environmental impact.

Footprint Measures

The best known “Footprint” measures are likely to be those published by the World Wildlife Fund (2019) and the Global Footprint Network (2021a). These indicate that the average Australian per capita use of productive land is approaching 7 ha, compared with the global average of 1.7 ha (and thus, the total available is 7.8 billion people × 1.7 ha = 12 billion ha. Global Footprint Network 2021b). Therefore, if the 9 billion people expected to be on earth by 2050 were to live as Australians do now, around 63 billion ha of productive land would be needed. But there are only about 12 billion ha of productive land on the planet. If none of this is set aside for nature, then each Australian would be living in a way that would require over 5 times as much productive land as all people could average, and if one third was set aside the multiple would be 8.

The UN's International Resources Panel estimates that for US resource consumption to be provided sustainably to all at present would require five planet Earths. (United Nations International Resources Panel 2019).

To Summarise Regarding Multiples

These numbers are imprecise and varied but they document quite large differences between current rich world per capita rates of resource consumption and ecological impact compared with poor world rates and world averages. The general impression is that if the probable 2050 world population of 9 billion was to rise to the present Australian per capita rate of consumption, the amount of productive resources needed would be in the region of at least 6 times and possibly up to 10 times the amount that could be provided sustainably.

Add the Significance of Deteriorting Trends

To the foregoing picture, the fact must be added that it is becoming increasingly difficult to access resources. Following are indications of the significance of this factor. It means that it would be a serious mistake to think about the prospects of raising all people to 2050 rich world “living standards” by reference to the effort needed to produce resources now. In general, the difficulty is likely to be much greater, and the success much smaller, meaning that in effect the totals assumed above underestimate the equalising task.

Climate Change

Little needs to be said about the probability that climate change will greatly impede future access to resources.

Declining Ore Grades

The CSIRO (2019) provides a plot which shows an approximate halving of Australian ore grades since 1950 for gold, lead, zinc and nickel. Mudd et al. (2016) document the significant fall in global copper grades. Rotzer and Schmidt (2018), say, “It has been shown in numerous studies that the ore grades of mined deposits have been falling over time”.

The Falling Petroleum Discovery Rate

According to the oil-and-gas consultancy Rystad Energy oil discoveries in 2017 were the lowest since the 1940s, having fallen every year since 2014. “… explorers are finding less oil resources per field … An average offshore discovery held about 100 million barrels of oil equivalent in 2017, down from 150 million boe in 2012”. Hienberg (2016) says “We are no longer making significant new discoveries of high quality oil, and the rate and size of fossil fuel discoveries in general are in exponential decline. This has been partly due to falling demand in the post GFC period but Hienberg and others show that from 2000 to 2009 there was an even worse return on investment in discovery. (See also Oyedele 2017.) Mischeaux (2016) says, “Between 2000 and 2012, $2.6 Trillion USD was invested in oil infrastructure CAPEX, with no gain in oil production (this data includes shale oil production in USA)”.

An important indicator of the increasing difficulty is the falling EROI for oil, meaning that more energy has to be invested in providing a given quantity. “… There was a time in the US, around the 1930s, when the EROI of oil was a monumental 100. This has steadily declined, with some fluctuation. By 1970, oil’s EROI had dropped to 30. Over the last three decades alone, the EROI of US oil has continued to plummet by more than half, reaching around 10 or 11”. (Hienberg 2016).

Reference will also be made below to Ahmed’s case (2017) that increasing difficulties are likely to lead several oil producing states in the Middle East to fail in the near future, which would greatly impact on global resource production capacity.

Forest Loss

Although the rate of forest loss declined in the 2015–2018 period, Bologna and Aquino (2020) report that global deforestation due to human activities is on track to trigger the irreversible collapse of human civilization within the next two to four decades”. They estimate that if the present rate continues, “… all the forests would disappear approximately in 100–200 years”. “… we have very low probability, less than 10% in most optimistic estimate, to survive without facing a catastrophic collapse”.

Water

It is well known that there is a serious and increasing problem of global fresh water scarcity. The Global Peace Index (2020, p. 71) says that if present trends continue, “By 2050, 27% of countries will experience catastrophic water stress and 22% catastrophic food stress”.

Land and Food

“A third of the planet’s land is severely degraded and fertile soil is being lost at the rate of 24 billion tonnes a year”, (UIA 2019. See also Millman 2015). The UN Environment Programme (2018) says, “Every minute we lose 23 ha of land worldwide to drought and desertification”. Loss rates can be expected to increase due to erosion, acidification, loss of soil carbon, climate change, pesticide pollution and non-return of nutrients. A review by the FAO (2017) concluded that “Although agricultural investments and technological innovations are boosting productivity, growth of yields has slowed to rates that are too low for comfort”.

Ecological Resources and Services

Many of the conditions and ecological services enabling current levels of natural resource production are deteriorating alarmingly. The “Planetary Boundaries” literature initiated by Rockstrom et al. (2009) quantifies several of these and although aspects of the study have been challenged (e.g. Brook 2018; Montoya et al. 2018) and defended (Stockholm Resilience Centre 2017), the notion has been widely recognised and adopted.

The review by Bradshaw et al. (2021) finds that the seriousness of these factors has been underestimated. They include the loss of biodiversity and sheer animal biomass, including now the possibility of insect loss and their pollination services, the capacity of ecosystems to break down wastes and toxicity, loss of fisheries due to ocean warming and acidification, the possible failure of the ocean current keeping Northern Europe warm and the many probable effects of climate change including acidification and sea level rise. The interaction and feedback effects between these kinds of factors are largely unknown, such as the effect of warming on the loss of ice cover reducing the planet’s albedo and methane release from the thawing of tundra, both further accelerating the warming that caused these effects.

Deteriorating EROI and Productivity

The significance of deteriorating EROI for oil production noted above is a specific instance of a more general effect impacting on many factors. It is a cause of the long-term decline in productivity rates. The foregoing rising difficulties and costs can be seen as increasing fractions of gross output or value that are having to be paid to secure net output. This effect cascades through the economy, especially as the declining energy EROI affects the resource and dollar costs of all things energy is used to produce.

In addition, there is the effect that Tainter (1988) drew attention in his The Collapse of Complex Societies. As scale and complexity increase, increasing quantities of input resources must be applied to system maintenance as distinct from delivering benefits or further expansion. US infrastructures are crumbling because of the inability to meet the cost of upkeep of now vast freeway systems. But even more important might be the increasing cost of deteriorating social infrastructure.

Social and Political Instability

The possibility of securing resources for an expanding world population committed to rising GDP per capita also depends significantly on whether or not socio-political systems in regions supplying resources will remain as orderly as they are now. Many believe that in general, they will not, as is indicated by the title of Ahmed’s article “Theoretical Physicists Say 90% Chance of Societal Collapse Within Several Decades” (2017). See also Bradshaw et al. 2021 for a summary statement.

The Global Peace Index (2020) finds that conflict in the world has been increasing since the beginning of the century. Deteriorating quantities and grades of natural resources are likely to generate increasing competition to secure supplies and these are likely to lead to armed conflict. For instance, possibly two billion people depend on the waters coming down from the Tibetan plateau but China is building dams to take much of it.

Ahmed provides an alarming account of how deteriorating natural conditions are driving several Middle East oil states towards becoming failed states, which would have the potential to cut world oil supplies dramatically in the near future. Another dimension is evident in the social turmoil associated with the rise and fall of the Trump presidency. A major causal factor has been the damage caused to the social fabric of American society by neoliberalism, such as the loss of livelihoods as NAFTA enabled the movement of jobs to Asia. Large numbers now experience highly unsatisfactory social conditions in the US. (Speth’s evidence 2012, shows the US at or near the bottom of the OECD countries on almost all social indicators.) This has generated intense discontent with the establishment and fuelled a loss of legitimacy and consent, jeopardising the capacity to deal with the many serious problems facing the country. Rising rates of global inequality are likely to contribute to a significant breakdown of social cohesion in coming years, among other things reducing the capacity of states to deal with problems of resource access.

To summarise, this section has provided support from several areas for the claim that while the task of enabling 9 billion to rise to present rich world levels of resource consumption assuming present difficulties and costs would seem to be well beyond possible, it is bound to become much more difficult in the near future.

Now Add the Significance of the Comitment to Economic Growth

To the foregoing picture of the situation, the implications of the fundamental commitment to continual and limitless economic growth must be added. The typically taken for granted goal is 3% p.a. Given that the populations of rich countries are now only growing slowly, this means the goal can be taken as a per capita income growth rate of around 3% p.a. If this was to be achieved and continued to 2050, the present Australian average income of $55,000 p.a. would be about 2.5 times as high as it is now, i.e. $137,500 (and by 2073 it would be double its 2050 level.) If a world population of 9 billion had risen to that level, world GDP would total c. $1,238 billion, which is around 15 times as large as it is at present.

Again, the WWF estimates that to meet the present, global amount of consumption of biocapacity sustainably 1.7 planet earths would be required, which would seem to mean that the 2050 levels of GDP and per capita use of these resources would be about 23 times sustainable levels. (This assumes that the ratio of resource use to GDP remains the same, i.e. that there is not significant decoupling. There is likely to be some “relative” decoupling, but no “absolute” decoupling; see below).

The significance of the magnitude of the foregoing multiples has been given little recognition in the general limits to growth and sustainability literatures. As will be stressed below, if the reductions in rich world and global over-consumption necessary for sustainability were relatively low, then adjustments might not be disruptive and reforms to existing systems might be viable. However, if the multiples are of the magnitude indicated by the foregoing evidence this will not be the case. Radically different systems will be necessary, of the kind outlined below.

#### Unsustainable consumption transgresses planetary boundaries, causing cascading existential risk.

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So great is our species’ collective impact on the planet that some scientists advocate designating an entirely new era, the Anthropocene (the Age of Humans), to describe the current moment.6 Since 1950, globalization has delivered remarkable progress, including an eleven-fold increase in global gross domestic product (GDP), adjusted for inflation.7 Many average citizens now enjoy material comforts unimaginable to monarchs in previous centuries.8 Such abundance has come at grievous cost to nature, however, fundamentally altering our relationship to the living planet.9 The global population has more than tripled from 2.5 billion to 8 billion over the same seventy years, and our ravenous material desires are jeopardizing the innumerable benefits we obtain from healthy ecosystems, ranging from breathable air and fertile soils to clean water and pollinated crops. Humanity has become the most powerful force shaping the Earth system.10

The scope and costs of this assault can no longer be ignored. They have been documented in a succession of stark reports from the United Nations and private groups like the World Wide Fund for Nature.11 On nearly all indicators, the trajectory is dismal. Global carbon dioxide (CO2) emissions would need to drop 45 percent by 2030 to hold the rise in average global temperatures to 1.5°C, the objective to which nations agreed in Paris in 2015. Instead, they are on track to decline only 3 percent by the end of the decade, portending a future of searing heat, raging wildfires, acidifying oceans, violent storms, rising seas, and mass migration.12 In the latest Emissions Gap Report, issued shortly before the twenty-seventh Conference of Parties to the UN Framework Convention on Climate Change (COP27), the UN Environment Programme (UNEP) admitted that there is “no credible pathway to 1.5°C in place.” Indeed, current policies point to a world where temperatures rise 2.8°C, and national commitments (even if fulfilled) would only reduce this to 2.4–2.6°C.13 “We had our chance to make incremental changes, but that time is over,” warns Inger Andersen, UNEP’s executive director. “Only a root-and-branch transformation of our economies and societies can save us from accelerating climate disaster.”14

Climate change, moreover, is just part of Earth’s environmental plight. Biological diversity is also imperiled, and global warming is not even the primary culprit.15 Around the world, ecosystems and species are at risk of collapsing as humans degrade and despoil landscapes and seascapes, dump pollutants and toxins into the environment, introduce invasive species, and harvest timber, fish, wildlife, and other living resources unsustainably.

The figures are sobering.16 Three-quarters of the planet’s ice-free terrestrial surfaces and two-thirds of its marine environment have already been severely altered, including by agriculture, ranching, logging, mining, urbanization, and industrial fishing.17 Ninety-three percent of global fisheries are overexploited or exploited to capacity, and fleets have reduced large ocean fish to 10 percent of their preindustrial numbers.18 Every year, the world discharges another 300–400 million tons of toxic sludge, heavy metals, and industrial poisons directly into the water, as well as 14.3 million tons of plastic into the oceans.19 Globally, fertilizer runoff has created more than 400 hypoxic (low oxygen) coastal “dead zones,” with a combined area larger than that of the United Kingdom.20

One million animal and plant species face near-term extinction.21 Since 1970, populations of wild vertebrates have declined by 69 percent and insects by 45 percent worldwide, and 3 billion birds have vanished from North America.22 Humans and our domesticates now account for 96 percent of the planet’s mammalian biomass; 70 percent of all birds are poultry.23 Half of all tropical forests have been destroyed since 1960, and each year the world loses another 3.36 million hectares (8.3 million acres)—an area the size of Belgium.24 Globally, more than 85 percent of wetlands and 35 percent of mangroves have already been lost.25

There have been five mass extinctions in Earth’s 4.5-billion-year history. Mounting evidence suggests we are on the cusp of a sixth.26 This risk is particularly acute in the world’s oceans, which are warmer than they have been in recorded history and 30 percent more acidic than they were just 200 years ago—the fastest change in ocean chemistry in 50 million years.27 Half of all coral reefs have disappeared since 1990, and 90 percent of those that remain are likely to die by 2050 as average sea temperatures exceed those ever recorded.28 Acidic waters, meanwhile, threaten the survival of zooplankton and invertebrates and the collapse of entire food chains. Without swift and dramatic steps to reduce greenhouse gas emissions, two Princeton University scientists warned earlier this year, the loss of ocean biodiversity over the next three centuries could rival the Permian Extinction, which saw the disappearance of 90 percent of ocean life.29

Our own species is suffering, too, on this degraded and crowded planet. Hundreds of millions face food insecurity, and agricultural production must rise 50 percent by midcentury to meet growing demands.30 Freshwater resources are under similar strain as snowpack melts and aquifers are drained faster than they are replenished. By 2050, 40 percent of humanity could confront severe water stress.31

Human health is also at risk. Since 1970, some 200 pathogens have leapt from wild animals to people, often through intermediate hosts. They include among others HIV/AIDS, Ebola, SARS, Nipah, West Nile, MERS, H5N1, monkeypox, and of course SARS-CoV-2, the virus that causes COVID-19 and that came from horseshoe bats.32 While epidemiologists debate the pandemic’s proximate origins (natural transmission versus laboratory leak), they agree that we have entered a new era of infectious disease—and that our unsustainable approach to nature is partly to blame.33 As humans and livestock encroach upon and disrupt biodiverse ecosystems, they encounter once-isolated species, exposing themselves to new viruses that can quickly spread globally.34 The average annual cost of emerging zoonoses is more than $1 trillion worldwide, with periodic pandemics capable of inflicting severe damage (in the case of COVID-19, as much as $28 trillion in lost global growth through 2025).35

Two and a half centuries after the much-maligned Thomas Malthus published his Essay on the Principle of Population, the good reverend merits another hearing, albeit with a twist.36 While Malthus may have erred in arguing that food production could never keep pace with human fecundity, overconsumption is definitely an ecological problem. According to the Global Footprint Network, it would take almost five Earths’ worth of resources for the world’s 8 billion inhabitants to achieve the same living standard average Americans enjoy today.37 And things are poised to get worse before they get better. Despite declining fertility, the human population will not plateau until at least 2060, and the aspirations of a rising global middle class will exacerbate ecological strains.38 Contrary to the beguiling claims of techno-utopians, there is scant evidence that societies get “more from less” as they become wealthier.39 Rather, the newly prosperous tend to outsource their natural resource demands to developing countries.40

In seeking to satisfy these appetites, we risk breaching several planetary boundaries—including those related to atmospheric CO2 concentrations, ocean acidification, species extinction, and nitrogen fixation—that define what scientists call a “safe operating space for humanity.”41 Indeed, evidence is mounting that important subcomponents of the Earth system could be approaching critical thresholds that, when crossed, bring about massive, nonlinear shifts that will themselves accelerate climate change, with disastrous and potentially irreversible consequences for nature and humanity.42 Such potential discontinuities include a rapid die-back of the Amazon rainforest, abrupt melting of boreal permafrost, and the sudden collapse of the Atlantic Meridional Overturning Circulation, an oceanic conveyor belt that keeps Europe’s climate temperate.43

Short of an alien invasion from outer space, it is hard to imagine any threat warranting more global solidarity and collective action than the prospect of rendering the sole planet we have uninhabitable. Our circumstance cries out for a “present at the creation” moment, akin to the flurry of international institution-building that followed World War II.44

#### Environment impacts break rational utility maximization. Uncertainty about size of our impact should motivate action to stave off catastrophe.

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[IAM = integrated assessment model]

3. Problems which are inherently beyond the scope of the standard model and a proposal for an alternative framework

In this section we examine the basic flaws in the normative framework underlying IAMs related to the deep uncertainty and extreme risk potentially involved in unmanaged, or weakly managed, climate change. This motivates our argument for the alternative ‘guardrail’ approach to climate policymaking, which we describe in section 3.3. Sections 3.4 and 3.5 identify two further deep and fundamental methodological problems with the IAM.

3.1. The nature of uncertainty and risk from climate change

An emissions pathway consistent with plans submitted for Paris UNFCCC COP21, 2015, implies that we are headed for temperature increases of 3 degrees Celsius or more within a century (UNEP, 2020). Such temperatures carry grave risks to humankind and the planet as a whole. We have not seen temperature levels 3 degrees Celsius or more above pre-industrial levels for around 3 million years, and at that time sea levels were 10–20 metres higher than now (Dumitru et al., 2019). It is quite possible that we could see temperature increases of 4 or 5 degrees Celsius 150 years or so from now, temperatures which the world has not seen for tens of millions of years. The uncertainty around the consequences of concentrations of greenhouse gases in the atmosphere for temperature implies that even if we aim for 3–4 degree Celsius temperature rise, there would be a risk of 6 degrees Celsius of warming. These kinds of temperatures could involve sea-level increases of scores of metres and inundation of many of the coastal cities of the world.

Those kinds of temperatures would radically change lives and livelihoods across the globe. Many parts of the world would become uninhabitable. One of the most densely populated regions in the world, the North China Plain, would likely experience deadly heatwaves later this century with ‘wet-bulb’ temperature exceeding the threshold defining what people can tolerate while working outdoors (Kang & Eltahir, 2018). Similar heatwaves could also occur in other densely populated parts of the world, such as North India. Hundreds of millions, possibly billions, would have to move, likely resulting in severe and extended conflict.

A global cascade of multiple tipping points in the climate system (Lenton et al., 2008) would be an existential threat to civilisation (Lenton et al., 2019).

After Glasgow UNFCCC COP26, November 2021, partially in response to a growing understanding of the potential magnitude of these risks, plans for many countries for emissions reductions have been strengthened (Climate Watch, 2021). Even if these are delivered in full, the mean temperature anticipated around the end of this century would be over 2 degrees Celsius with serious risks of more than 3 degrees Celsius (UNEP, 2021). And we may well be already close to tipping points in relation to the Amazon rainforest, permafrost, and Antarctic ice sheets (Lenton et al., 2019).

The stakes we are playing for are immense.

3.2. Deep uncertainty and extreme risk

Every aspect of climate change – the drivers, the pace, the economic impacts, the response to interventions – is marked by considerable uncertainty. Changes in demographics, preferences, and technology – the underlying drivers of the economy – are hard to predict; and even more difficult are changes in politics, which can have first-order effects on so many of the relevant variables.

When we combine the uncertainties – about climate science, about the ‘right’ economic model, about the parameters of the models, about the changes in those parameters over time, about the political processes which affect both the environment and economy – climate policymaking is a quintessential example of decision making under uncertainty, where the decisions themselves affect the magnitude of the uncertainties.

Following Knight, we distinguish between risk and uncertainty. In the former case, all the possible outcomes and their associated probabilities are known; in the latter case they are not. The uncertainties affect economic trajectories, and the impact of market failures; they have an even bigger impact on the normative analysis. Some of the key concerns, such as those posed by non-stationarity, affect both the descriptive and normative analysis. The standard IAMs pay only limited attention to risk and ignore uncertainty. While in some cases the former can, with some difficulty, be incorporated into the analysis, the latter cannot, as we explain below.

Within the utilitarian framework, the simplest representation, in the presence of risk, is to replace U in each of the maximands described so far with its expected value. This is almost surely an inadequate approach (see sections 3.5 and 6), but it is the simplest, and most in line with conventional economics. Because of concavity, EU(C) < U(E (C⎯⎯⎯)), and given the scale of risk and reasonable estimates of the degree of risk aversion, the disparity would be large. Thus, as climate change proceeds, risk increases, and the gap between the putative welfare of the ‘central or average case’, analysed in any model that does not fully embrace uncertainty and risk, and the expected utility of future generations along actual trajectories becomes increasingly large. And it is biased: the difference between expected utility on paths in which climate action has been curbed to say 1.5 degrees Celsius and 3 degrees Celsius are far larger than in a model ignoring risk. That implies, of course, a greater willingness to pay to reduce the (likely) magnitude of climate change.15

This is especially so once we take into account some of the compounding economic risks associated with a non-orderly transition (e.g. the costs associated with systemic fragility), and incorporate damage functions reflecting risks to life, health and biodiversity, and the consequences of extreme events, leading to the risks of extreme losses.

We face extreme risks. In their presence, for time sufficiently far into the future, EU(C) may not be well defined. The standard criteria of choosing policies to maximise expected intertemporal utility may fail because, with some widely used utility functions, all trajectories within a wide class16 may yield the outcome of minus infinity.17 This is especially so if the distribution of some of the relevant variables is fat-tailed, as Weitzman (2009) has argued could well be the case. Then, the standard descriptive model introduced in section 2.1 breaks down: it cannot ‘explain’ individual behaviour and the trajectory of the economy in the absence of government intervention; and it cannot provide guidance as to socially desirable interventions.

Weitzman (2009) set out what he called the ‘Dismal Theorem’ which followed from his argument, namely that these models could imply that present generations would be prepared to pay an infinite amount to avoid future catastrophe. The reason for this was that the potential catastrophes were immensely or immeasurably severe and the probability of them occurring was far from negligible. Others have suggested (Nordhaus, 2009) that the problem does not arise if the increase in risk occurs slowly enough and the discount rate is high enough, but Weitzman maintained that unbounded expected utilities present a fundamental problem with the whole approach and are not dependent on a particular formulation. Moreover, he argued that no plausible amount of discounting would remove the problem.18 As he put it (2012) – consistent with the thesis of this paper:

 … . I suspect rather strongly … that the primary reason for keeping GHG levels down may be mainly to insure against high-temperature catastrophic climate damages.

There may still be some trajectories, achievable at moderate costs, whose outcomes are bounded. Societal welfare is best enhanced by taking actions which avoid the extreme outcomes occurring (with a significant probability). This is the perspective taken for the UN Paris climate agreement of 2015. If there are actions that strongly limit the probability that disastrous outcomes occur, and these entail modest costs, they should be undertaken. The relevant choice is only among those trajectories that avoid, or radically reduce the probability of, the disastrous outcomes (see Stern & Stiglitz, 2021, for more on ranking alternative trajectories when all are unbounded). In the language of dynamic programming, we try, as best we can, to avoid the state valuation falling off a cliff. This is the guardrail approach. Its role in public discussion and international agreements is described in the next section.

3.2.1. Deep uncertainty

Deep uncertainty – where individuals do not know all of the possible outcomes and the probabilities of occurrence of different possible events,19 and know that they don’t know – presents even more fundamental methodological difficulties for the IAM. In particular, it gives rise to incomplete orderings. This is inconsistent with the underlying (but rarely stated) hypothesis in the IAMs that there is a complete ordering. And, it is not just the incompleteness per se of the ordering that is the problem; it is where the incompleteness arises, which is the inability to describe and evaluate some of the most important, catastrophic outcomes.

While Savage subjective expected utility is used in many subfields in economics, especially where there are repeated events in which there can be some congruence between subjective probabilities and objectively observed frequencies, in a world that is ever-changing, in a world of ‘unchartered territory,’ with deep uncertainty, such as climate change, that framework and the axioms underlying it are not convincing.20 Savage himself suggested his framework was more appropriate for ‘small world’ decisions – and if there were ever a set of problems that were not small world, those surrounding climate change would be among them. There is far from consensus on the axioms underlying expected-utility.

Kreps (1979) has argued that in the presence of extreme uncertainties, individuals do not act as if they maximise expected utility but show a preference for flexibility. This approach may be consistent with more precautionary behaviour, i.e. taking stronger actions to avert climate change than one would expect to see were individuals maximising their expected utility with levels of risk aversion normally observed. Others (e.g. Maskin, 1979) have argued that in the presence of ‘extreme ignorance’ it is plausible that individuals (and societies) act in ways which show extremes of risk aversion, more akin to the max–min objective function than the maximisation of subjective expected utility.21 Gilboa and Schmeidler (1989) have provided a framework that allows for the integration of expected utilities in domains where there is not deep uncertainty and something more akin to the max–min principle in domains where there is.22

(We should emphasise there are still other fundamental critiques of the IAM’s normative approach, maximising discounted expected utility: For instance, the standard approach does not adequately differentiate attitudes towards risk from intertemporal preferences. See the discussion of section 6.)

In short, in the presence of deep uncertainty, the framework of maximising expected utility lacks credible foundations, and under plausible assumptions, rational individuals undertake more precautionary behaviour than might be suggested by such a model.23

3.2.2. Non-stationary analyses

A central problem is that climate change is moving us into unchartered territory: we do not know how an increase in greenhouse gas concentrations will affect weather and how changes in climate will affect the economy, simply because our economy has never experienced in the lifetime of homo sapiens anything like what we are likely to face. We can extrapolate the future based on the past, but whether in these circumstances that makes sense is highly problematic. The underlying dynamics are not well-described by stationary processes (Milly et al., 2008). It is analogous to the problems of prediction in the years preceding the global financial crisis, when financial markets created new products which they claimed fundamentally changed the way the economy behaved; but the only data to forecast how the economy would behave was from an economy without these financial products. As it turned out, the extrapolations (forecasts) based on that data were wildly off the mark. In this case the problems are likely on a far bigger scale.

These concerns are especially important because of the large non-linearities associated with climate processes, which makes simple extrapolations from the limited climate change experienced thus far highly dubious.

The absence of a scientific basis to estimate probabilities of outcomes associated, say with climate change of 3.5 degrees Celsius, well beyond anything experienced, combined with the sensitivity of IAM analyses to those probabilities, in turn has profound implications for the policy relevance of IAMs: they provide no guidance on how to resolve differences in key judgements around risk and uncertainty, because they simply assume such differences away.24

3.3. The guardrail approach

We argued above that deep uncertainty has profound implications for how individuals actually behave and what are reasonable frameworks for individual decision-making. Here, however, we are concerned about societal, not individual, decision-making. Once we move into a world where there is neither consensus about utility functions (the welfare maximand) or probabilities or the functions describing damages or costs of abatement, the question arises: how can we reach societal agreement about what to do? How we aggregate disparate preferences and beliefs has been a longstanding question in economics and political science (see Arrow, 1951).25 In the case of climate change, we can observe how the global agreement, or consensus, as embodied in the Paris 2015 UNFCCC agreement, was reached: it became broadly accepted that with temperature increases over 2 degrees Celsius there was a significant probability of extremely bad outcomes, potentially so bad that there was a consensus that we should act strongly to try to avoid them. One did not have to have full agreement on the utility function, the damage or abatement cost functions, discounting, or the probabilities. All one needed was convincing evidence of sufficiently high probability of very adverse or catastrophic outcomes that could be avoided at moderate costs, and on that there was consensus across more than 190 countries.

From a formal point of view, it may not be possible to provide concrete social orderings across paths with potentially catastrophic outcomes. Attempts to use standard, sound utility functions can lead to divergent sums or integrals of social utility across a whole range of potential paths. We have, at best, partial rather than complete orderings. In this case the response, which makes sense, has been to follow a lexicographic approach, where we first rule out paths that involve unacceptable risks of catastrophe and then make our evaluations across paths which do not carry such risks.26 That is the guardrail approach and has been expressed in this context in terms of an upper limit on acceptable temperature increases.

Having agreed on a reasonable, consensus goal, the task then is to find the best way of achieving that goal. The difference is analogous to that between cost–benefit and cost-effectiveness analysis. In many arenas of policy where the benefits are hard to evaluate – wars, regulations which affect health, safety and life itself or biodiversity – there is often resort to cost-effectiveness analysis. An agreement is first reached on goals and constraints, and economic analysis centres on the best way to achieve the given goals within the constraints.

Moreover, in the context of climate change, the focus is on avoiding the calamitous events, not average outcomes. IAMs, by contrast, focus on average outcomes in the sense of expected utility. The non-linearities identified in earlier IPCC reports (IPCC, 2014, 2018) imply significant reductions in those extreme risks if temperature rises can be kept well below 2 degrees Celsius, with the associated limitations in greenhouse gas concentrations. Recognising that stabilising temperature requires stabilising concentrations, the international community has focused on achieving net carbon neutrality by around 2050.27

This target setting or ‘guardrail’ approach to policymaking has parallels in other arenas where we have rules which are designed to manage extreme risk. For instance, driving is not permitted if alcohol blood concentration is above a threshold. With cliffs or railway platforms there are restrictions on proximity to the edge. There are safety limits on the amount of certain substances in food or drink.

As a first approximation, there is an easily implementable modification to the approaches of the IAMs that can embed the guardrail approach. Assume, for a moment, that we were to buy into the representative agent model and all the other assumptions underlying the IAM. Associated with the agreed upon maximum temperature change there is a maximum level of atmospheric greenhouse concentration. Then we simply add a constraint to the intertemporal maximisation problem, that there never be greenhouse gas concentrations in excess of that level. Of course, this is only a first approximation – it misses out on risk and the other key ingredients emphasised earlier. And it would still embody many of the problems analysed in section 5 below, in particular, their inability to grapple with the central policy question of how to tackle rapid and economy-wide system change. Such an approach cannot, of course, help us answer the question of what our target should be; it simply helps us to understand the best ‘glidepath’.

#### Cumulative effects of even small ecosystem damages cannot be evaluated statistically. Accepting ‘some risk’ is informed denial that invites catastrophe.

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Nature, as previously stated, has intrinsic value only and so allows each component of an ecosystem to develop its prescribed structure, carry out its biophysical function, and interact with other components through their evolved, interdependent processes and self- reinforcing feedback loops. No component is more or less important than another—except in human valuation based on personal desire for a particular outcome. Though components may differ from one another in form, all are complementary in function.

Our intellectual challenge in decision-making (legal and otherwise) is to recognize that no given factor can be singled out as the sole cause of anything. All things operate synergistically as cumulative effects that exhibit a lag period before manifesting a clearly noticeable outcome of some type. Cumulative effects, which encompass many little, inherent novelties, cannot be understood statistically because ecological relationships are far more complex and far less predictable than our statistical models lead us to believe—a circum- stance Francis Bacon may have been alluding to when he said, “The subtlety of Nature is greater many times over than the subtlety of the senses and understanding.”14 In essence, Bacon’s observation recognizes that we live in the “invisible present” and thus are seldom able to recognize cumulative effects.15

The invisible present is our inability to stand at a given point in time and see the small, seemingly innocuous effects of our actions as they accumulate over weeks, months, and years. Obviously, we can all sense change—day becoming night, night turning into day, a hot summer changing into a cold winter, and so on. There are, however, some people who live for a long time in one place who can see generalized, longer-term events and remember a winter of exceptionally deep snow or a summer of deadly heat.

Despite such a gift, it is a rare individual who can sense, with any degree of precision, the changes that occur over the decades of their lives. At this scale of time, we tend to think of the world as being in some sort of ongoing, relatively steady state, with the exception of technology, wars, or periodic natural disasters. Moreover, we typically underestimate the degree to which slow, seemingly innocuous change has occurred—such as global warming. We are unable to directly sense slow changes, and we are even more limited in our abilities to interpret the relationships of cause and effect in these changes.

Nevertheless, these subtle processes, acting quietly and unobtrusively over decades, reside cloaked in the invisible present, such as gradual declines or improvements in habitat quality. Thus, from a legal point of view, the invisible present can be fraught with the tyranny of many, little, seemingly innocuous and unrelated social-environmental decisions that invite disaster—especially when abetted by informed denial in the struggle for political power, despite the warnings of history and people with unimpaired foresight, such as Winston Churchill who, with clear foreboding, saw the onrushing threat of Nazi Germany. He said:

When the situation was manageable it was neglected, and now that it is thoroughly out of hand we apply too late the remedies which then might have effected a cure. There is nothing new in the story. ... It falls into that long, dismal catalogue of the fruitlessness of experience and the confirmed unteachability of mankind.

Want of foresight, unwillingness to act when action would be simple and effective, lack of clear thinking, confusion of counsel until the emergency comes, until self- preservation strikes its jarring gong—these are the features which constitute the end- less repetition of history.16

And, today, for example, virtually all the world’s roughly 3,000 professional climate scientists (and other professionals who work closely with them) foresee a more inhospitable world for the generations of young children already born and those unborn, including higher prices for food; growing numbers of plants and animals becoming extinct, along with their ecological functions and services; as well as other biophysical disruptions linked directly to the warming climate. Yet, despite all the evidence observed and irrefutably measured worldwide, such as melting glaciers and rising ocean levels, the fossil fuel industry (among others) and ideological groups are trying to delay regulation of greenhouse emissions by funding campaigns that create confusion and intimidation in an effort to discount the data and win agreement with their points of view through the legal system.17

At length, however, cumulative effects, gathering themselves below the level of our conscious awareness, seem to suddenly become visible. By then, it is too late to retract our decisions and actions, even if the outcome they cause is decidedly negative with respect to our intentions. So it is that cumulative effects from legal decisions favoring corporate exploitation of natural resources multiply unnoticed until something in the environment shifts dramatically enough—even for people without social-environmental foresight—to see the outcome through casual observation. A threshold of tolerance defines this shift in the system, beyond which the system, as we knew it, appears to suddenly, visibly, irreversibly become something else. Within our world, this same dynamic takes place in a vast array of scales in all natural and artificial systems, from the infinitesimal to the gigantic, from the personal, to the corporate, to the national, to the global—despite legal rulings to the contrary.

#### The growth imperative under capitalism stems from the dominance of the ‘monetary production’ model, which requires exponential growth as a condition of maintaining full employment.

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3.1 Introduction

Traditional Keynesian and Post-Keynesian policies provide useful tools for addressing many of the inherent social and economic flaws of capitalism such as involuntary unemployment, poverty and inequality. However, these policies fail to account for environmental limits. As such, the solutions they offer all rely on increasing aggregate demand, stimulating higher levels of economic growth and throughput. By contrast, a job guarantee (JG) program embodies special features that dissolve the contradiction between employment and the environment: between economic and ecological prosperity.

This chapter explores these special features and argues that the JG can be used to pursue the social and environmental aims of degrowth.1 The first section examines Keynes’s diagnosis of and solution to the problem of unemployment in terms of effective demand. It is shown that the principle of effective demand has important and paradoxical implications for economic growth and the environment. The next section builds on Marx, Veblen and Keynes’s insight regarding the central role of money in a capitalist economy. It is argued that monetary production (M–C–M′) is not only the root cause of unemployment but also the driving force behind the existing ecological crisis. The third section compares the JG and alternative paths to full employment in terms of their environmental implications. The final section considers how a JG program may be modified to slow down the economy while maintaining full employment.

3.2 Effective Demand: The Link Between Jobs and Growth

Keynes’s (1936) theory of effective demand diagnosed the problem of involuntary unemployment in capitalist economies. According to Keynes, the volume of output and employment is determined by the sum of consumption and investment demand. Because people tend to save a portion of their income, there is a gap between consumption demand and income (output). In order to achieve full employment then, investment demand must fill the gap at the full employment level of output. However, there is no mechanism to ensure that investment demand will fill the gap because investment decisions are based on expected future profits in a world characterized by fundamental uncertainty. The normal situation for a capitalist economy is one where investment falls short of what is required to bring about full employment.

Keynes’s explanation of effective demand was confined to the short-run. When Domar (1946, 1947) extended Keynes’s analysis into the long-run, he found that the problem of effective demand was made worse. The reason is that the same investment needed to fill the gap between income and consumption also increases productive capacity. As the volume of output expands, following each increment of investment, so too does the absolute size of the gap between income and consumption. As the gap grows, successively more investment is needed to fill it. But each additional increment of investment only further widens the gap. Consequently, “the economy finds itself in a serious dilemma: if sufficient investment is not forthcoming today, unemployment will be here today. But if enough is invested today, still more will be required tomorrow” (Domar 1947, p. 49). Finally, as the demand gap expands, excess capacity puts downward pressure on profit expectations. The result is that just when a higher volume of investment is required, the inducement to invest is weakened.

Boulding’s (1945) bathtub theorem can be used to shed light on this paradoxical result. The bathtub theorem is particularly insightful because it is stated in real (physical) terms: A = P – C. The rate of accumulation is equal to the rate of production minus the rate of consumption: where A is the rate of accumulation, P is the flow of production (addition to capital stock) and C is the flow of consumption (destruction of the capital stock).2 Boulding uses the analogy of a bathtub to explain the model. Production represents the flow of water into the tub. Consumption represents the flow of water down the drain. The volume of water in the tub represents the capital stock, and the difference between the flow of production and consumption is the rate of accumulation.3

According to Boulding, the bathtub theorem is the “first step in understanding long-run crises of capitalism—deflationary pressures of a mature society and its intractable unemployment” (1945, p. 3). Unemployment occurs because the economy has an institutionally limited capacity to absorb the stock of accumulated assets. When the growth of the stock exceeds the level desired by capitalists, the rate of accumulation (the difference between production and consumption) must fall. This can happen in one of two ways: (1) the rate of production must decrease and (2) the rate of consumption must increase.

The first case—a decrease in production—is brought about by falling profit expectations and results in involuntary unemployment. As Boulding puts it, “in a situation where the owners of the stock pile are unwilling to increase their holdings, in the absence of an increase in consumption, employment and production must decline until the difference between production and consumption is equal the rate of accumulation which capitalists are willing to allow. This … in a nutshell is the main Keynesian contribution to economic thought” (1945, p. 3). The alternative—an increase in consumption—is unlikely to occur unless the government intervenes which is the traditional Keynesian solution. In light of the Domar problem, ever-increasing government spending is required to maintain full employment in the long-run (Vatter and Walker 1989, 1997; Wray 2007).

Boulding’s analysis helps to illuminate the paradox of effective demand precisely because it is stated in physical terms. What it demonstrates is that crises occur when the system becomes too productive. In other words, when we produce too much, profit expectations fall off, investment declines and the result is rising unemployment, poverty and misery. The paradox is clear: people suffer not because we do not produce enough, but rather because we already produce too much, or alternatively, because we do not destroy (consume) output fast enough.

To avoid a crisis of involuntary unemployment in the long-run, Domar demonstrates the net investment in each period must be larger than in the previous period. But investment expands productive capacity. Therefore, to avoid becoming too productive, society must always expand production. In other words, to avoid unemployment, a capitalist economy must grow at an exponential rate. As Dillard puts it, “employment in investment activity helps to maintain demand for the consumption output of existing facilities. In order to make full use of the factories already in existence, we must always build new factories. Otherwise, in our society with its characteristic widespread inequality of income, there will not be enough money spent to keep the old factories going. If investment falls off, unemployment results” (1948, p. 8).

3.3 A Common Cause: Unemployment and Ecological Crisis

In order to address the problems of unemployment and ecological crises, it is necessary to understand their root causes. Marx (1860), Veblen (1904) and Keynes (1936) all identified the root of the economic problem in the institution of production for a profit or more simply monetary production (Dillard 1980, 1987). This section explains how and why the causes of the current ecological crisis can be traced to the same source.

The fundamental link between unemployment and ecological crisis is overproduction.4 And, overproduction as noted by Marx and Keynes, in particular, is a monetary phenomenon. Classical theorists denied the possibility of overproduction on the basis of Say’s Law: supply creates its own demand. However, as Marx points out, Say’s Law only holds in the context of a barter (i.e. non-monetary) economy. In a situation where individual producers exchange commodities for commodities (C–C′), supply literally is demand. If money is introduced as a medium of exchange (C–M–C′), the identity of supply and demand is broken and the possibility of a crisis of overproduction or insufficient aggregate demand emerges (Marx 1860).

In a capitalist economy, the potential for crisis is inevitably realized because money is both the starting point and aim of production (M–C– M′). The purpose of production is no longer use value (C′), but rather money profits (M′). Capitalists own the means of production and therefore control production decisions. They must be willing to throw money into circulation to hire workers and purchase raw materials if production is to take place. On the other hand, workers own nothing but their labor power and remain at the mercy of capitalists. Whether or not social needs are being met, workers cannot set production in motion. What is required is the belief on the part of capitalists that they will be able to realize profits through the future sale of output. If capitalists’ expectations are grim, they can deny workers access to the means of production, and the result is involuntary unemployment.

Unemployment is the most obvious social contradiction of monetary production. In a society in which production is geared toward profits (exchange value) and not needs (use value), the satisfaction of needs becomes a curse. Indeed, in a capitalist economy, meeting needs is merely a byproduct of making money profits. And when the system is too productive, profit expectations fall off, resulting in poverty amid plenty. This explains why massive quantities of resources are channeled into the wasteful industry of need production (i.e. marketing and advertising), even as the basic needs of large portions of the population remain unmet.

It should come as no surprise that an economic system that operates without regard to human needs fares no better when it comes to respecting environmental limits. If we ask why people who want to work are denied employment, the answer is simple. It is not profitable to employ them. If we ask why the destruction of the planet continues unchecked, the answer is likewise that it is not profitable to stop. So long as production aims at the endless accumulation of money profits, the environment remains in serious peril (Blauwolf 2012; Foster 1999; Harvery 2010; Klein 2014; Kovel 2002; Magdoff and Foster 2011; Smith 2010, 2011).

So, why must a capitalist economy always grow? The answer is not that we are failing to produce enough output to meet basic human needs. For example, US GDP per capita in 2013 was over US$53,000.5 Rather, the economy must grow so that capitalists can realize profits and workers can secure jobs.

The relationship between profits and employment reflects the fundamental conflict between workers and capitalists in a system of monetary production. Economic growth is not directly in the interest of the majority of the population—at least not in the industrialized North.6 Indeed, beyond environmental limits, growth is a threat to everyone’s well-being. For the working class, growth is desirable only indirectly insofar, as it supports the security of employment. On the other hand, growth is the raison d’etre of the capitalist class. As Marx puts it, “Use value must therefore never be looked upon as the real aim of the capitalist; neither must the profit on any single transaction. The restless never-ending process of profit-making alone is what [capitalists] aim at” (Marx 1867, p. 130). This is the basic condition of monetary production and the key to understanding both unemployment and ecological crisis.

Although the theory of effective demand emerges from an analysis of the short-run, Keynes identifies the basic relationships between profits, employment and growth. In a monetary economy, the level of employment depends primarily on the volume of investment; investment is a function of profit expectations; and profits in the aggregate will only be realized if investment is sufficient to ensure that the economy is growing.7 If the economy stops growing, involuntary unemployment rises. To solve the problem of unemployment then, the government must ensure that aggregate demand is always sufficient to maintain economic growth.

Keynes’s diagnosis of the problem of unemployment in terms of money paved the way for its solution. However, the environmental problems associated with monetary production remain to be addressed. Full employment if achieved through increased aggregate demand and growth will simply put more pressure on an already overtaxed planetary ecosystem.

To reexamine the theory of effective demand and the policies flowing from it in the face of environmental limits, it is useful to recall Boulding’s bathtub theorem. Boulding points out two ways to remedy a growing divergence between production and consumption: (1) increase consumption and (2) decrease production. The first is not likely to occur in the absence of government intervention owing to falling profit expectations associated with accelerating accumulation. Thus, the Keynesian solution of government action is required to bring consumption back in line with production. In the second case—in the absence of intervention—production declines creating unemployment and possibly depression. So it seems we are stuck with a trade-off between the environmental costs of growth and the social costs of unemployment.

But have all the alternatives been exhausted? Is there no way to make use of the unique powers of government to remedy overproduction without increasing consumption? In other words, is there some way to have our cake and eat it too; with production declining and employment remaining stable?

#### Attempts to transition without repurposing dominant infrastructure fail---they are coopted OR cement exclusionary forms of community. The state must be used to construct a counter-hegemony of work.

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What degrowth is not

That said, being such a provocative term, ‘degrowth’ is often misinterpreted or deliberately misrepresented, even by many who generally share the objectives of degrowth. We thus want to discuss some of the most widespread misunderstandings upfront. One common misconception is that degrowth is either a proposal for recession, imposed austerity, or that it will necessarily result in economic collapse and social catastrophe. Since economic growth is seen as the only possible way to improve living standards, whenever an economic crisis happens, critics of degrowth will say, often disingenuously, ‘see, this is what happens when you degrow’.35 And, since our economy depends on economic growth, and economic crisis is catastrophic for many people’s livelihoods, people assume that degrowth would similarly be a catastrophe and lead to full-scale collapse. Both assumptions are, of course, false. Degrowth is the opposite of recession: recessions are unintentional, while degrowth is planned and intentional; recessions make inequality worse, degrowth seeks to reduce it; recessions typically lead to cuts in public services while degrowth is about decommodifying essential goods and services; recessions often cause bold policies for sustainability to be abandoned for the sake of restarting growth, while degrowth is explicitly for a rapid and decisive transformation.36 Hence the slogan of the French décroissance movement: ‘Their recession is not our degrowth’. Such a transformed, just, and growth-independent economy is the core of the degrowth project. Further, degrowth is explicitly framed to build a system not structurally bent towards crisis. Crises like the 2008 financial crisis, the coronavirus pandemic, the fires engulfing the Amazon, and the past and ongoing genocide of Indigenous peoples indicate that growth-driven capitalism already is a catastrophe. More than ever, the choice is between degrowth – a multidimensional set of transformations based on sufficiency, care, and justice – or barbarism. In other words, we talk about degrowth in order to avoid the catastrophe that awaits us and which is already a daily reality in many parts of the world. Degrowth is not the crisis; capitalism is.

Another critique of degrowth is that it is reactionary, that it is against modernity and against progress.37 For example, the Greek economist and politician Yanis Varoufakis recently characterized degrowth as some kind of regressive nostalgia aiming for a return to pre-industrial times that mainly argues that ‘now we need to go back to the bush’. Similarly, the Serbian American economist of inequality Branko Milanovic vilified degrowth as ‘an asceticism reminiscent of the early Christendom’ and a proposal for the ‘immiseration of the West’.38 That little ‘de-’ in the word often rubs people the wrong way. And many – even on the left – fall for the ideology of growth and conflate modernity, development, emancipation, and improvement with economic growth, with more stuff, and with a continuous development of productive forces. It makes sense when conservatives, centrists, and liberals advance this criticism: for these people, any criticism of the present is all-too-often accused of being dismissive of the advances that we have made. ‘If you don’t like it, go live in a cave and see how you like that.’ This all-or-nothing argument is the last resort of those who aim to preserve the status quo. But when it is put forward by leftists, it seems rather insincere. Rather than being against modernity and progress, degrowth claims that a system built on economic growth obstructs meaningful progress towards global justice, well-being, and sustainability. And, as we will argue, degrowth posits that defending and strengthening the social, political, and cultural rights that modern movements have won requires moving beyond economic growth. Furthermore, far from being reactionary or against all modern technologies or conveniences, degrowth aims at democratizing the development of productive forces and social metabolism in order to achieve public abundance. And, far from being about ‘belt-tightening sacrifice’, degrowth is about strengthening more meaningful and less destructive forms of happiness, new forms of the joy of life (the oldest degrowth periodical is called Le journal de la joie vivre), or what has been called ‘alternative hedonism’.39 Degrowth is not against progress; rather, holding on to continuous economic growth undermines real progress.

In a similar vein, ‘degrowth’ is also often understood as simply another word for ‘austerity’: it is claimed that degrowth advocates use ecological arguments to say that we should have less, to deprive us of good stuff and make us tighten our belts – in particular, poor people’s belts.40 Even proponents of a Green New Deal, who are critical of growth, have asked, ‘Who will march for green austerity?’41 This is a curious criticism because austerity (or as the International Monetary Fund and World Bank call it euphemistically, ‘structural adjustment’) has always been imposed on populations for the sake of growth. We have been convinced, for half a century now, that cutting public services is good for us because it will increase competitiveness, balance the budget, and eventually lead to growth.42 By contrast, degrowth targets the assumption that it is economic growth that we need and focuses instead on a radical redistribution of income and wealth, on global justice, and on what actually ensures wellbeing. While austerity increases inequality by thrashing public services and benefitting the rich, degrowth policies focus on democratizing production, curbing the wealth and over-consumption of the rich, expanding public services, and increasing equality within and between societies. As we’ll explain in this book, under degrowth, public services would flourish, rather than see cuts – degrowth is about private sufficiency and public abundance. Certainly, life would look a lot different, many people would likely possess fewer material objects – but others would have access to more and society would be more sustaining, just, convivial, and fulfilling. In essence, degrowth aims at a society in which well-being is mediated less by capitalist market transactions, exchange values, or material consumption – and more by collective forms of provisioning, use values, and fulfilling, meaningful, and convivial relationships.43 As one degrowth slogans states: ‘moins de biens, plus de liens’ (fewer transactions, more relations).

One of the most common misconceptions assumes that degrowth would imply an across-the-board, undifferentiated reduction of all types of production or consumption – a [is] patently absurd idea. On the one hand, it is argued, degrowth’s critique of ‘growth as such’ does not differentiate between essential and superfluous production and consumption and proposes to reduce all. As recently claimed by Kenta Tsuda,

Degrowthers tend to elide the colloquial meaning of consumption, as something like discretionary ‘retail therapy’, with the term’s economic definition: the final use of a resource as a good or service. The latter sense encompasses not only the ostensibly superfluous resource uses that degrowthers would reduce or ban, but also unambiguously essential ones: nutritious food, commodious shelter, healthcare and childcare.44

However, degrowth is not against consumption as such, but rather criticizes the dominance of a consumer culture, in which consumption governs social and political life (wherein proposals to the current crises are framed as individual choices), and the absurdity of ‘positional consumption’ based on status competition. Degrowth also takes aim at policies promoting GDP growth precisely because growth does not differentiate between useful and destructive, essential and superfluous. In contrast, degrowth differentiates between certain economic activities and forms of production and consumption, proposing policies for the downscaling of some and the flourishing of others – depending on how they address social needs, justice, care, and sustainability (see chapters 4 and 5).

On the other hand, proponents of ecological modernization or a Green New Deal have repeatedly argued that degrowth does not make sense because, as recently argued by Noam Chomsky, a ‘shift to sustainable energy requires growth: construction and installation of solar panels and wind turbines, weatherization of homes, major infrastructure projects to create efficient mass transportation, and much else’.45 Literally all degrowth proposals do include policies for the selective expansion of all these things. Yet degrowth also asks whether this would necessarily result in an increase of the size of the economy as measured in GDP when combined with the required contraction of other sectors and activities. Put differently, degrowth aims to disassociate socially and ecologically necessary improvements from the idea of economic growth – which often leads people to mix up well-being with economic growth as measured through GDP, while obscuring the material and energetic throughput that economic growth depends on.

[PARAGRAPH BREAKS PAUSE]

Another common misunderstanding is that degrowth for poorer countries does not make sense, since it is in particular the poor that need material development – and that therefore degrowth is a neo-colonial plot, or just magical thinking, that will keep global inequality as it is.46 Again, however, the opposite is the case – degrowth starts explicitly from a global justice perspective that aims to decolonize the Global North so as to make space for the Global South.47 Indeed, a degrowth perspective aims at the convergence of living standards at an equitable and globally sustainable level. While degrowth has allies in the Global South within the broader framework of ‘alternatives to development’, it mainly focuses on the Global North or, more specifically, on the affluent who maintain what has been called the ‘imperial mode of living’.48 Furthermore, as we argue in this book, degrowth embraces proposals for a decolonization of North–South relations, reparative justice and transfers of resources, technology, and money, and a self-determined increase of material and energy use by the dispossessed in the Global South (and those that have too little in the Global North).49 This should suffice to make clear that degrowth is also not a critique of population growth (arguments that centre overpopulation are squarely refuted by degrowthers), a depoliticizing call for ‘humanity’ to live more sufficiently, or an initiative to conserve ‘Half-Earth’ (which tends to misdiagnose the causes of ecological disruption and disregard Indigenous land rights).50 Some authors have also warned that degrowth’s rise in popularity could reproduce neo-colonial asymmetries by setting a global agenda that dominates and renders invisible diverse perspectives from the Global South. Degrowth would thus ‘re-enact the presumed superiority of Modern developments over alternative topologies of the pluriverse’.51 While this might be a danger that needs careful attention, degrowth explicitly rejects imperial and Western hegemony and advocates for ‘liberation from the one-sided Western development paradigm, as a precondition for enabling a self-determined shaping of society and a good life in the Global South’, and enters into active alliances within the broader pluriversal framework of ‘alternatives to development’.52 Some understand degrowth – or more often ‘post-growth’ – merely as a descriptive concept that characterizes societies that are not or are no longer growing. For example, in their recent book on a Global Green New Deal, Robert Pollin and Noam Chomsky analyse degrowth as a proposal for stagnating or shrinking economies, arguing that the ‘fundamental problems with degrowth are well illustrated by the case of Japan’ – which has for decades been a capitalist and growth-dependent, though slow-growing, economy. 53 If degrowth or post-growth are understood as merely analytical terms, they can indeed be used to characterize some advanced capitalist countries with long-term growth rates close to or below zero. Degrowth would thus also describe the trend of falling growth rates characterized by economists as ‘secular stagnation’ – contracting economies in crisis, showing the structural problems capitalist economies face without expansion.54 However, degrowth is not a description of, for example, the tendencies of crisis-ridden late capitalist industrial societies that, without growth, tend towards neo-feudal hierarchies and exploitation, also called societies of ‘social decline’ by sociologists.55 On the contrary, degrowth is an explicitly normative concept. It delineates the contours of a desirable, democratic transformation process, which focuses explicitly on analysing, criticizing, and then overcoming growth dependencies. Degrowth does in fact argue that because growth rates are declining in some advanced economies, it is high time to restructure these economies along the lines proposed by degrowth in order to avoid structural problems such as rising unemployment, inequality, and debt, which are partly caused by growth dependencies. In other words, it is only because our economies are dependent on continuous growth that stagnation is seen as problematic by economists. Degrowth proposes to break out of this bind by decoupling well-being from the imperative to grow. It is the contours of such a concrete utopia that we work out in this book. Finally, next to these misunderstandings – and there are many others that will be covered throughout the book – there is also an intense debate on the usefulness or pitfalls of the term ‘degrowth’.56 In fact, many who may agree with the general thrust of degrowth’s radical ecological transformation still complain that the term is too focused on undoing growth and that it activates the problematic semantic frame of ‘growth’ (conflating it with more of the good things) that should rather be avoided. Some have thus argued that we should remain agnostic about the question of growth – in other words, about the increase or reduction of GDP – and simply focus on the policies and transformations needed.57 Instead of ‘degrowth’, ‘agrowth’ has been proposed as a better term (as cognate with ‘atheism’), since it makes little sense to orient oneself to GDP statistics, which are largely meaningless for well-being.58 Others still prefer ‘postgrowth’, emphasizing that the goal is not to contract but to become growthindependent in an era ‘after growth’.59 ‘Post-growth’, when used as a normative rather than a descriptive term, is often seen as a safer, less negative, and more aspirational concept. As a result, post-growth often is agnostic about the role of GDP and its relationship to environmental and social impacts. While there is certainly some truth to these arguments, and eventually there may come a time to drop the term ‘degrowth’, they miss one of the key goals of degrowth: to tear down the cracked edifice of the hegemony of growth. As we explain in chapter 2, growth is the cornerstone of an ideological construct justifying uneven global relations, growth dependencies, and policies that uphold private profits. Thus, it cannot simply be ignored; it must be dealt with head-on. Also, as discussed in more detail throughout the book, if a decoupling of GDP growth from ecological destruction is not possible, and if modern societies are structurally dependent on expansion, then it would be highly irresponsible to not address these structural growth dependencies, because they will always block effective environmental policies that would hamper growth.60 As James Baldwin said, ‘Not everything that is faced can be changed, but nothing can be changed until it is faced.’61 Without facing the ideology of growth head-on, we will not be able to manifest the radical transformation of society that we need. Despite some of the confusions that often emerge from using the negative term ‘de-growth’, we believe it remains useful as a term that is more difficult to co-opt (see the fate of the term ‘sustainable development’), that names the enemy, and, through its provocative framing, is extremely productive in starting conversations about systemic alternatives. As we argue in this book, degrowth is differentiated, first, through its principled criticism of capitalism and economic logics, and second, because the degrowth policies that aim at global ecological justice and the necessary reductions in material and energy throughput necessary to achieve it will in all likelihood also lead to a reduction in the size of ‘the economy’ as measured in GDP – and it is good to be prepared and do this in a planned manner. 62 It is true that the aspirational character of ‘post-growth’ also has its benefits in certain contexts – for example, European Green parties have used the term ‘post-growth’ as a less confrontational way to advance degrowth ideas. ‘Post-growth’ is somewhat more open than ‘degrowth’ because it does not activate the growth frame as much, and all the complex debates this stirs up, but focuses on a future beyond economic growth. Yet, a debate on growth is still very necessary. As Giorgos Kallis puts it in a discussion with Kate Raworth on whether ‘degrowth’ is a good word: ‘the missile has landed, but it hasn’t worked, so it is not yet “the time to move on”.’63 The issue is also partly a linguistic problem. While in France, where the term décroissance was born and gained widespread prominence, in German, using De- or Ent-alongside Wachstum is awkward, and so Postwachstum is usually preferred. In Japan, datsu seichou (roughly, ‘degrowth’) is used; in Dutch, ontgroei (roughly, ‘ungrowth’); and in Scandinavian countries, people usually use the English term, ‘degrowth’. In this book we use the term ‘degrowth’, though neither are we against people using ‘post-growth’ instead. What we argue This book offers offer a systematic introduction to the dynamic, transdisciplinary debate on economic growth, critiques of growth, the many currents of degrowth, degrowth policies, and a political strategy for degrowth from a decolonial, feminist, and anti-capitalist perspective. Throughout the book, we respond to the ‘naïve questions on degrowth’ that are often raised by its critics (e.g., Is green growth not more realistic? How could a planned contraction be implemented? What should grow and what should degrow?64). Many questions may remain, but we aim to provide context for readers to think more deeply about the challenges posed by the critiques of growth. What distinguishes degrowth, we claim, is that it holds together social, cultural, and ecological questions and in this way advances new ideas that could provide answers to the pressing questions of the twenty-first century. The peculiarity and the potential of the degrowth discussion is that these various forms of criticism are taken up, recognized, brought into mutual productive exchange, and understood as parts of a common space of discourse. This book is therefore not only an introduction to the vision of degrowth but necessarily also an introduction to the dynamics of growth and the critiques of growth in modern societies. We argue that degrowth contributes what other leftist proposals do not: a holistic critique and proposal capable of deconstructing the dominant ideology driving capitalism today – the ideology of growth – and showing ways forward for unmaking growth and capitalism in our everyday lives, in our societal institutions, and in our economic structures. We thus devote chapter 2 to the concept of ‘growth’. Here, we highlight some foundational claims for the degrowth debate. Economic growth, we argue, appears as the ideological, social, and biophysical materialization of capitalist accumulation. To understand and dismantle the politics of growth today, we need to analyse economic growth as three interlinked processes that have evolved dynamically over time. First, economic growth as a policy goal, as well as the broader societal obsession with growth as we know it today, are relatively new developments that can be traced to attempts in the middle of the twentieth century to stabilize and plan capitalist economies through state intervention, to measure capitalist economies against state socialist ones, and to appease the increasingly militant working class. It was only through the new idea that ‘the economy’ could be measured through GDP that it became possible to justify the belief that growth is natural, necessary, good, and unlimited. However, focusing on the new hegemony of growth alone would obscure the social and material roots of growth. Thus, second, we argue that growth is also a social process that preceded the hegemony of growth and which results in cultural norms, specific modes of production and living, and a set of class interests oriented towards increase, acceleration, and escalation – subsequently leading modern societies to become dependent on growth and its dynamics of accumulation. And third, growth is a material process – the everexpanding use of land, materials, and energy – that is rooted in patriarchy, colonialism, and capitalism, resulting in an accelerated material and energetic throughput and exploitation for the sake of profit. ‘Economic growth’ can thus be understood as both an increase in economic production and as an interlocking, self-reinforcing cultural, social, and material process which has transformed life and the planet over the past centuries. Having defined growth, in chapter 3 we explore the critique of growth. People often think that degrowth is only about limiting resources; however, it is much more complex. Degrowth, we argue, can be understood as the attempt to integrate a number of different strands of growth critique – we focus on seven. Economic growth, according to these critiques, (1) destroys the ecological foundations of human life and cannot be transformed to become sustainable; (2) mismeasures our lives and thus stands in the way of well-being and equality of all; (3) imposes alienated ways of working, living, and relating to each other and nature; (4) depends on and is driven by capitalist exploitation, competition, and accumulation; (5) is based on gendered over-exploitation and devalues reproduction; (6) gives rise to oppressive and undemocratic productive forces and techniques; and (7) necessarily relies on and reproduces unjust relations of domination, extraction, and exploitation between capitalist centre and periphery. A historical analysis of growth, and a discussion of the critiques thereof, comprises the first half of the book. In the second half, we start from the position that degrowth is not only a critique but also a visionary proposal, an attempt to create ‘concrete utopias’ and to combine them with resistant practices and alternative ways of life in the here and now. In the last decade, there has been much debate on what degrowth stands for, with emphasis being put on different aspects of the theory. Chapter 4 provides an overview of the different visionary currents of degrowth and draws them together in a common definition. Degrowth, we argue, describes the democratic transition to a society that – in order to enable global ecological justice – has a much smaller throughput of energy and resources, and thus also a smaller economy; ensures justice, self-determination, and a good life for all under this changed metabolism; and does not depend on growth and continuous expansion. In essence, the degrowth vision is about pushing back against the dominant economic logic and economic calculation – namely, the question of whether everything pays off financially – as the dominant basis for decision-making in society. The aim is thus to repoliticize and democratize social institutions as well as power and property relationships, in order to abandon the social dominance and logic of ‘the economy’. Following this, we ask: how do we get there? In chapter 5 we consider the policies that could make degrowth a reality. Degrowth offers many concrete proposals for ‘non-reformist reforms’ (André Gorz) or a ‘revolutionary Realpolitik’ (Rosa Luxemburg).65 This refers to reforms that take advantage of existing institutions and bureaucratic regulations and yet also lead to immediate gains for social movements and even point beyond the capitalist, growth-oriented mode of production and centralized technocratic states. They ultimately strengthen the struggles that help us overcome these same institutions, eventually helping to bring about revolutionary change.66 We focus on transformational changes in six areas: (1) democratizing the economy, which includes, for example, strengthening the commons and solidarity economy, transferring utilities like water or electricity into democratic ownership, providing institutional support for cooperative workplaces, or proposals for macroeconomic coordination and participatory planning; (2) redistribution and social security, which includes policies guaranteeing access to basic services such as health care, public transport, food, and education for all, or as the French décroissance movement has called it, dotation inconditionelle d’autonomie – universal basic services; (3) democratizing technology, supported by policies such as assessing the impact of technologies on society and the environment over their entire life cycle, or opening repair centres in every community; (4) revaluation of labour, including policies such as radical reduction in working time, and eliminating useless or socially harmful jobs (like advertising or the fracking industry) while recentring the economy around needs and care work; (5) democratization of social metabolism, meaning that large areas of production and consumption will need to be dismantled, while other systems will need to be developed in their place – this could include, for example, reforming taxation systems to disincentivize harmful industrial activity, or moratoria on planned fossil fuel infrastructure such as airports or mega-highways; (6) international solidarity, which could include, for example, restructuring the international monetary system to dismantle uneven hierarchies between nations, or cancelling the debts of Global South countries and transferring resources, technology, and money as reparations for climate debt. This wide selection of policies shows how degrowth is not just about proposing a single policy that could potentially change everything (as many basic income advocates argue, for example) but, instead, offers a holistic package where each policy complements the others. However, policies alone cannot bring about a society-wide transformation: we need a strategy for societal change. While the discussion about how to combine policies, electoral campaigns, social movements, and local initiatives is still only developing, chapter 6 aims to advance this debate by offering a transformative approach to linking movement-building, a strengthening of existing cooperative alternatives, and nonreformist policy change. Drawing on the analysis of sociologist Erik Olin Wright,67 we distinguish three different, complementary transformation strategies: interstitial strategies that create more cooperative economic practices and spaces that do not follow the logics of capitalism, growth, and competition within existing structures; non-reformist reforms that transform policies and institutions and fundamentally democratize the economy, thus strengthening the scope for alternatives and struggles; and strategies for building counterhegemony and parallel institutions of power that, through confrontational tactics such as strikes, blockades, citizen assemblies, autonomously organized municipalities, and alternative forms of government, make it possible to break with the logic of growth in individual sectors and regions of society. 68 We argue that the transformation towards a degrowth society requires an interplay of these three types of transformation strategies. We stress, however, that building counter-hegemony and parallel structures of power – in other words, pursuing a strategy of dual power – is paramount, despite being under-explored within the degrowth debate. It is only through collective power and the development of new kinds of common sense that it becomes possible to productively relate the other transformation approaches to envision degrowth becoming reality. Degrowth, we believe, is a critique, a proposal, and a politics whose time has come. After the term was taken up in France, Spain, Italy, and Germany, it spread beyond Europe. There are now groups, events, festivals, and publications in North America, India, and Mexico, among others, and degrowth is increasingly taken up in various social struggles. Though degrowth discussions initially developed surprisingly independently of one another, the degrowth community is increasingly interconnected globally and becoming more prominent in the mainstream. This, however, does not mean that it should not be further developed. In the concluding chapter, we highlight four areas which could be better integrated within the degrowth debate: class and race, geopolitics and imperialism, information technology, and democratic planning. In this book, we propose that degrowth is well positioned to help us navigate the crises that face us. Degrowth is unique in offering both an analysis of how we got here and a way to get to the root of the crises we face. Over the last five centuries, a material, cultural, and political system has developed that depends on growth and further drives it. This is a system geared towards collapse. Neither green growth nor left productivism are desirable options: growth cannot solve the problems it creates, and, to face the impending crises, we need an economy that values rather than exploits, disposes of, and invisibilizes, women and people of the global majority. As far as the Green New Deal goes, this is an admirable and encouraging development on the left – and its growing popularity is a promising indicator of the possibility of mass appeal for transformative, radical projects. Here, a degrowth perspective can be a compass for determining what kind of policies a truly transformative – that is, a caring, internationalist, post-growth, and socially just – political project would entail. Our intention is that this book provide both a compass and a navigational guide for how to get there. 2 Economic growth What words come to mind when you read the word ‘growth’? Perhaps: economy, progress, prosperity, Gross Domestic Product (GDP), improvement, well-being, wealth, jobs. In the news, we might read about the predicted effects of a crisis on the annual rate of GDP, right next to an article about the importance of medita tion for personal growth. All in one word, ‘growth’ is identified with many things: social and political goals, the dynamics of the economy, individual or social achievement. It forms what the cognitive linguist George Lakoff calls a ‘cognitive frame’: in which a cluster of ideas is triggered by the mention of a single word.1 As one example, ‘regulation’ might denote something positive for those on the left of the political spectrum, signifying the curbing of corporate greed and greater protections for the poor, while, on the right, it has negative connotations: more control by the state over people’s personal lives, authoritarianism, socialism. ‘Growth’, however, as a cognitive frame, is as yet less contested. In many corners of the political spectrum, it still signals improvement, development, more opportunities, more money, and so on. This cluster of interconnected ideas, where growth basically means ‘more of the good stuff’ or ‘progress’, is today almost ubiquitous and largely unchallenged. Because it is both so ubiquitous and ambiguous, we need to be very clear and define what we mean by growth before we can even begin talking about degrowth. But this gets complicated when we consider that growth is often – almost purposefully, it seems – poorly defined by the people who advocate for it, even as it is obsessed over. And, given that it seems often simply to mean ‘more good things’, it is often hard to argue against. In this book, we analyse growth as a core feature of capitalism. As we discuss in more detail in chapter 3, capitalism can be understood as society driven by accumulation. From this perspective, growth can be understood as the materialization of this dynamic of accumulation. To put it differently, capitalism appears as growth – and this materialization is not only social, but also biophysical or material. In this chapter, we argue that, to understand and dismantle the politics of growth today, we need to analyse economic growth as three interlinked processes that have evolved dynamically over time. First, growth is a relatively recent idea, the hegemony of which is the core ideology of capitalism, justifying the belief that growth is natural, necessary, and good, and that growth, as the increase of output and the development of productive forces, is linked to progress and emancipation. Second, growth is a social process that has long preceded the current hegemony of growth in contemporary society: a specific set of social relations resulting from and driving capitalist accumulation that stabilizes modern societies dynamically and at the same time makes them dependent on expansive dynamics of growth, intensification, and acceleration. Third, growth is a material process – the ever-expanding use of land, resources, and energy and the related build-up of physical stocks – which fundamentally transforms the planet and increasingly threatens to undermine the foundations of growth itself.2 Our central argument is that these three each have their own selfreinforcing dynamics, which are nevertheless interlinked, fundamentally shaping how we live. ‘Economic growth’ thus not only describes the increase and acceleration of the monetary production economy – that which is measured as GDP – but also a comprehensive material, social, and cultural process of mutually constitutive dynamics of expansion. This process of expansion has transformed life and the entire planet over the last five centuries. For a part of humanity, especially in the Global North, this has drastically improved material living conditions and enabled successful social struggles for participation. For others, this process was accompanied by exploitation and the destruction of livelihoods. Today, at the beginning of the twenty-first century, these intertwined dynamics of expansion are increasingly reaching their limits because they undermine the ecological, social, and political foundations on which they are based. We have been told that the rising tide of growth will lift all ships if we do not rock the boat (meaning if we do not disturb the progressive unfolding of the forces of growth and accumulation). However, in the face of the ecological crises of ‘existential’ proportions, the opposite seems more accurate: If we do not rock the boat of growth and pull the emergency lever, all lower decks will soon drown. If we do not switch tracks now, we will continue to be rocked by crisis after crisis until growth itself throws society from its own rails – violently. This leads us to the next chapter, where we outline the various critiques of growth upon which the degrowth literature has drawn. 2.1. Growth as an idea One of the more basic, and important, ways to understand growth is as an ideological construction – a collective myth that shapes modern societies and how we are told to see the world and ourselves in it. While growth is also much more than this – as we explore further below – many people do not realize that the concept of growth itself, applied to the economy, is a surprisingly recent invention. Even though there are various precursors – such as ‘development’, ‘progress’, or the much quoted ‘wealth of nations’ by Adam Smith – the term ‘economic growth’ has only been used since the middle of the twentieth century. It was not until the invention of GDP in the 1930s that growth in the modern sense could be measured, and it was not until the 1950s that it became the key ideology of capitalist and actually existing socialist societies. Since then, the idea that growth was desirable, necessary, and essentially infinite has become common sense: self-evident and far-reaching, fundamentally shaping the political, social, and economic developments on planet Earth.3 This increasingly global ideology, which plays a central role in the hegemonic stabilization of modern societies, is what we call the ‘growth paradigm’.4 Yet, as we explore in the following sections, this is only one, and a relatively more recent, dimension of growth. In order to go beyond a simplistic critique of GDP, we must analyse how the modern growth paradigm builds on and is interlinked with growth as a social and material process, going back at least to colonization and early capitalism. The invention of ‘the economy’ An important prerequisite for economic growth becoming so central to state governance was the invention of ‘the economy’, as an independent sphere of social life based on specific laws which can be statistically recorded and measured. As early as the eighteenth and nineteenth centuries, political economists in England and France postulated economic development as a relatively autonomous sphere that balances itself through the famous ‘invisible hand’. This process was considered to be clearly separated from nature and politics and to be determined by its own laws. The separation between economic, political, and natural laws is at the basis of liberalism, a doctrine advancing minimal state intervention into the autonomous sphere of economic activities.5 But it was not until the 1930s and 1940s that economic experts, politicians, and, increasingly, the public began to understand ‘the economy’ as a self-contained totality where flows of money regulate the relationships between the production, distribution, and consumption of goods and services within nationally organized borders.6 This idea, which today is widely taken for granted, replaced the older view in which economic processes were conceptualized as physical material and energy flows, which naturally gave rise to limits to growth. In contrast, the new measures, which aimed at ‘the speed and frequency with which paper money changed hands’, seemed to be able to expand without limit, without being limited by physical or territorial boundaries.7 The development of accounting techniques and statistical tools, in particular national accounts and GDP, was central to this understanding of ‘the economy’. The latter was developed in the 1930s and 1940s in conjunction with Keynesian efforts to combat the Great Depression and as a tool for planning war economies and arms production in the United States and England during the Second World War. In GDP, the formerly fuzzy sphere of ‘the economy’ was crystallized into a technical object with clearly defined contents and boundaries. Put simply, GDP measures the sum of the monetary value of goods and services, produced by paid labour, sold in a given period of time (e.g., one year) in a given economic area (e.g., Greece, or the world). Often, GDP is divided by the number of inhabitants of a country or region and then expressed as per capita GDP. Over time, this became a much-used measure of prosperity – and used especially as a metric to compare different countries or different time periods.8 As we discuss in more detail in the third chapter, GDP has been criticized from different perspectives. In essence, the criticism is that GDP only measures the monetary value of goods and services produced through gainful employment: it does not distinguish between the positive and negative effects of these products and services on the well-being of a society and makes everything that is not paid for invisible. In addition, GDP measurements fail to take into account who gets paid for which work, and how this is distributed within a society. This means that unpaid activities such as housework and care, self-sufficiency and subsistence, or voluntary work, as well as stewardship of the land, are not included. An increase in car accidents, for example, can therefore increase GDP through medical treatment, car repairs, and so on – and so can environmental destruction, if it leads to more paid work. The growing production of wasteful packaging, discarded electronics, and damaged and non-repairable equipment, or the monetarization of entire areas of society that were previously not regulated by money, such as ride-sharing, all contribute to economic growth.9 Far less well known is the fact that all these controversies about the correct measurement of wealth and the economy can be traced back to the period of development and international standardization of GDP in the late 1940s and early 1950s. Almost all leading economists in the middle of the twentieth century, including the ones who invented GDP, spoke out against using it as a yard-stick for the prosperity of nations and for international or historical comparisons.10 There were a number of conceptual differences between national traditions for measuring GDP and fundamental disagreements about the measurement method. Debates revolved around concepts such as externalities, unpaid housework, and subsistence. Accordingly, different countries defined income in different ways. Some, for example, did count unpaid housework or, in addition to monetary values, accounted for material flows such as processed steel in kilograms. But governments and international organizations (especially the OECD and the UN) streamlined these intense academic debates, as they urgently needed comparative statistics to manage membership dues and international aid payments, and unified existing approaches by standardizing a particular version of GDP measurement in the early 1950s.11 Since then, this statistical measuring method established itself in the capitalist West and then globally, making GDP the ‘world’s most powerful number’.12 Although the statistical measurement method has been constantly updated and adapted within the framework of the UN – primarily to deal with changes in the importance of trade and technological innovations – the core logic of ‘(mis-) measuring our lives’ through GDP has remained the same to this day. 13 This modern, dematerialized understanding of ‘the economy’ made invisible how present-day economies fundamentally depend on an everincreasing flow of energy and matter. Its implementation is closely linked to technical and geopolitical shifts in the twentieth century, which led to the explosion of the global energy supply and the total materials and land used in subsequent decades.14 Bear in mind that GDP is far more than a technical tool for measuring economic activity. It generates a whole grammar that not only shapes economics but also structures shared ideas of the world – above all, through its close connection to the growth paradigm. So, while economic growth is a highly ambivalent and elusive concept, its semantic core is statistically fixed: it is defined as the annual increase in GDP or per capita GDP and is usually expressed in percentages. The growth paradigm The international standardization of statistical measurements of the economy was central to making growth a policy objective. Only through this universalized concept of ‘the economy’, commensurable over time and space, did it become conceivable to measure what was to grow: the sum of market transactions within national borders. Only then did the idea that long-term, stable, and unlimited growth was at all possible and desirable become established. In fact, in the political discussions of the early post-war period, the idea of economic growth was conspicuously absent. Rather, the central themes were full employment, stability, and reconstruction. Before 1950, there was almost no interest at all in economic growth as a policy goal in political statements or economic literature.15 In the following years, however, growth was catapulted to the top of the hierarchy of political goals. At the time, movements for decolonization were arising in former colonies around the world, the Cold War was in full swing, and it became imperative to pacify class struggles in both the Global North and South. Something needed to be done to stabilize Western economic dominance and capitalist class relations. There needed to be a way to show conclusively the progress of capitalist economies. First declared the goal of national economic policy by the chairman of the US Council of Economic Advisers in 1949, it became the globally accepted measure of progress from the mid-1950s onwards. The sociological modernization theories developed by North American and European white men were framed as an irreversible and unilinear process of economic growth.16 Cold War competition further fuelled the race for growth, through which governments could show their economic dominance. Growth became the yard-stick for comparing the productivity of capitalist and socialist economies. Emblematic of this crucial phase of the development of the growth paradigm is a 1958 statement by Nikita Khrushchev, chairman of the Council of Ministers of the Soviet Union: ‘Growth of industrial and agricultural production is the battering ram with which we will smash the capitalist system.’17 Nationstates thus entered into competition not for equality, emancipation, or jobs, but for the rising quantity of goods and services they could produce. By the late 1950s, growth had become a central goal of economic policy and the most important indicator, tying growth and welfare together and equating them with the continuous expansion of market transactions. In this constellation, GDP became the first and general indicator of the modernity, prosperity, standard of living, development, and prestige of countries. The hegemony of growth fundamentally transformed the state’s tasks, purpose, and legitimacy, all of which became linked to growth and thus to the economy. This process occurred much earlier than is usually believed. Wendy Brown, for example, situates the threefold economization of the state in the 1980s and links it to the rise of neoliberalism: The state secures, advances, and props the economy; the state’s purpose is to facilitate the economy, and the state’s legitimacy is linked to the growth of the economy – as an overt actor on behalf of the economy. State action, state purpose, and state legitimacy: each is economized by neoliberalism. A focus on the rise of the growth paradigm, however, shows that already from the 1950s onwards the expansion of the economy became what could be described as the raison d’état. 18 Government interventions all over the world became largely focused on maintaining a stable growth path and on creating and maintaining favourable investment conditions. The growth state stood at the centre of the democratic-capitalist constellation of the ‘golden age’, the long phase of stability and rising prosperity in the second half of the twentieth century. The growth paradigm has played a key role in transforming the social discourse on how to distribute wealth: from a zero-sum game in which a fixed amount is distributed (so what some win, others lose), to a seemingly positive-sum game in which everyone benefits from the growing economic product and therefore has a common interest in economic growth.19 Growth promised to turn difficult political conflicts over distribution into technical, non-political management questions of how to collectively increase GDP – an ideology that only partially reflected reality within the capitalist core during the ‘golden age’, and much less so from a global socio-metabolic perspective.20 By thus transforming class and other social antagonisms into so-called win–win situations, it provided what could be called an ‘imaginary resolution of real contradictions’ and played a key role in producing the stable post-war consensus around embedded liberalism.21 In the West, growth made it possible to redirect the demands of the workers’ movement towards more participation and equality. In the East, it justified the lack of democracy and the failure of revolutionary ambitions. In the ‘developing countries’ – a category itself developed through the logic of the growth paradigm – it served in combination with the idea of ‘development’ as justification for the smashing of subsistence and traditional economies and the implementation of large-scale technical infrastructures after the formal end of colonialism, and further as a way to justify structural adjustment and the stripping of public goods.22 Growth thus helped to overcome the political focus on equality and redistribution, depoliticizing the economy. As noted by an American economist and advisor to President Eisenhower: ‘Growth is a substitute for equality of income. As long as there is growth there is hope, and that makes large income differentials tolerable.’23 In fact, growth became presented as the common good, thus justifying the particular interests of those who benefitted most from the expansion of market transactions and capital accumulation as beneficial for all. The historian Charles S. Maier puts it in a nutshell: ‘The true dialectic was not one of class against class, but waste versus abundance.’24 Drawing on the definition of hegemony, as developed by the Italian Marxist Antonio Gramsci, growth appears as an unquestionable, positive value at the centre of a network of ideas and everyday common sense which justifies, and silently coerces people into, contemporary relations of power and hierarchy – including social relations of production such as wage work.25 As discussed in more detail below, by tightly linking ideas of emancipation and progress to economic growth, the growth paradigm became the normative ideal of modernity – not just in liberal circles, but also in socialist thought. Indeed, the power of this myth became so strong that it captured most intellectual currents and social movements on the progressive left that wanted to overcome capitalism – which, as put by Eric Pineault, ‘have remained imprisoned in the imaginary of growth’.26 2.2. Growth as a social process We can now understand growth as a hegemonic idea that emerged quite recently, discursively tied to GDP. But growth is far more than an increase in GDP, as it is normally defined. In fact, GDP is only the tip of the iceberg, the surface phenomenon of a whole set of social processes related to capitalist accumulation that drive growth, and of ever-increasing biophysical flows that are mobilized by this global economy. To see the whole picture of this world system, we must go much further back than the twentieth century, because this newer ideology of growth is itself rooted in both social and biophysical processes that go back to the beginnings of capitalism and colonialist expansion. This deeper understanding of the nature of growth distinguishes degrowth from more vague critiques of economic growth, which focus on the pitfalls of GDP alone and are limited to proposing alternative ways of measuring economic output, rather than addressing the roots of growth itself. In the following sections we analyse growth as a social process: a specific set of social relations resulting from capitalist accumulation, which not only drive the reproduction of capitalism but also act as a central stabilizing mechanism in modern society. To understand this aspect of growth, we need to engage with the humanities, social sciences, and political economy. In this section, we begin by discussing how capitalism emerged and analyse how growth led to specific class structures which, in turn, brought about a dynamic relationship between class formations and material growth. We argue that ‘dynamic stabilization’ is a core feature of modern societies – where, in order to remain stable and reproduce their social structures, growth societies require continuous economic expansion, technological innovation and escalation, and social-cultural acceleration. Dynamic stabilization explains how and why growth societies are fundamentally dependent on growth. Unleashing capital: the dynamics of accumulation The social materialization of capitalist accumulation can be analysed as an economy driven by the production of profit – in which societal wealth ‘presents itself as an immense accumulation of commodities’.27 The annual production of these commodities is, more or less, what GDP measures. Within capitalism, money moves through society and mobilizes machines, resources, and labour power to produce commodities. As will be discussed in more detail in chapter 3, the expansion of the output of this commodified societal wealth rests on capital being invested (the ‘input’) to increase the capacity to produce and circulate commodities (the ‘output’). Many analyses and critiques of capitalism deal with the structural relations, tensions, and contradictions resulting from the dynamics between these factors, mainly capital and labour, and focus on the period when the monetary production economy became dominant with industrialization. However, the analysis of capitalism that has shaped the degrowth debate not only starts much earlier, with the rise of capitalist enterprises in the context of colonialism. It also centres other processes shaping capitalist growth, mainly related to the commodification and appropriation of nature and care, processes of devaluation, cheapening and externalization, and to the dynamic stabilization of capitalist society through growth. While this analysis will further unfold throughout the rest of the book, the following sections sketch some historical background that might help illustrate this perspective.28 Homo sapiens have lived on this planet for about 200,000 years. For most of human history, all humans have lived nomadically as hunters and gatherers. Agriculture existed for about 10,000 years as a regionally dominant production method, and since then phases of social development have alternated with phases of decay in various regions of the world. However, there was no, or close to no, economic growth in its modern sense. This only started to change with the beginning of colonialism, the rise of capitalist enterprise, and then industrialization.29 For most of human history, communities’ relationships and self-reproduction were based on systems of mutual obligations, power, or wealth, but not on the logic of capitalism, the ceaseless accumulation of capital. Over thousands of years, humans have experimented with a vast array of social formations, some of which included large and complex civilizations organized on surprisingly egalitarian lines, others involving merchants investing in the expansion of trade – yet on the whole, those dealing with capital remained marginal to those societies. This started to change beginning with the emergence of the ‘world system’ in the sixteenth century. 30 At that time, early venture capital companies, driven by the arms race of the early modern European states and their enormous capital requirements, financed expansionary voyages to the Americas, importing raw materials such as cotton and silver. From these early colonial enterprises, trading companies emerged, which later developed into joint-stock companies whose central purpose was, and remains, the endless accumulation of capital. Increasingly, capitalists started to invest in agriculture and industry, thus permeating the world of human labour with the logic of continuous accumulation and – where they could, as with the plantation regime around cotton – remaking the entire mode of production to their benefit. By appropriating raw materials, based on both slave and wage labour, and by integrating these through trade flows that spanned from Europe to the Africas, Asia, and the Americas, they created a dynamic world system that has since reshaped the entire planet.31 This accumulation took place at the expense of people in different parts of the world in different ways. In the Americas, genocides were perpetrated against Indigenous peoples, and millions of people from African regions were sold into slavery. The entire colonial enterprise, so intricately linked to the emergence of capitalism, was justified by racism – the systematic dehumanization of certain groups of people for the benefit of others – which came to form an integral part of the social dynamics of capitalism to this day. Through the privatization of the commons, the rural population in Europe lost the basis for their subsistence production. These enclosures also created the everyday scarcity that is still the basis of capitalist growth today – limiting people’s ability to use their surroundings for subsistence and generation of communal wealth. Stripped of the land and their means of subsistence production, people were forced into wage labour – a process of violent ‘primitive accumulation’ (Karl Marx) or incorporation of noncapitalist social worlds (Rosa Luxemburg) that continues in ever-changing forms to this day. States played a key role in all of this – not only in the ‘war capitalism’ of the earlier period, but also by driving land seizure around the world and by using their powers in the ‘cheapening’ of key resources, in imperial wars underlying capitalist development, or in guaranteeing the property rights that made capitalist production possible in the first place.32 As we discuss at length in the next section, the entire dynamism within the world system changed when, beginning in the eighteenth century, the plantation revolution in the Americas was linked with emerging industrial capitalism in Europe, which in turn started to be increasingly powered by a truly revolutionary technology: coal-fired steam engines.33 These social and economic changes went hand in hand with the emergence of a set of perspectives and ideas that legitimized, enabled, and even drove the expansion of the world system – and which also laid the foundation for the later development of the modern growth paradigm. To begin with, the idea of the ‘development’ or ‘progress’ of human societies in a linear course of time had to be actively produced. Most known cultures of the past – as well as some contemporary communities – had a cyclical understanding of time as ‘eternal recurrence’, interpreted their present as an abandonment from a mythical ideal past to be restored, or had some other non-linear conception of time. Yet beginning with the Renaissance and building on Christian apocalypticism, which assumed an absolute end point of human societies with the Last Judgment, concepts of abstract time and space emerged in Europe, in particular since the seventeenth century. The spread of the mechanical clock promoted changes in the understanding of time as objective, linear, and countable. Geometry and cartography also enabled a new conceptualization of land and territory as abstract, borderless, uniform, and measurable space that can be emptied or filled as needed, clearly demarcated, and traded as a commodity through property rights.34 Early modern natural sciences not only promoted the idea of abstract nature but also argued that humans could dominate nature. In a mechanistic view of the world, nature and human labour were conceived of as mechanisms governed by laws and flows of energy that could correspondingly be manipulated and controlled (see section 3.6).35 Concepts and practices of linear time, abstract space, and mechanical nature became key ideological building blocks of the capitalist colonization of the planet. The practical treatment of all things and living beings as comparable, interchangeable, and tradable, as well as the mechanistic understanding of nature based on linear thinking, were consolidated in colonialism. The plundering of the planet was thus justified by the idea that land, natural resources, the work of women and the colonized, and all life are to serve mankind (and this was usually meant only the white men who claimed ownership of it36) and can therefore be possessed, exploited, and changed at will (see sections 3.1 and 3.5).37 Beginning with the seventeenth century, these ideas underwent a secularized reformulation: a linear narrative of progress divided people into ‘civilized’ and ‘primitive’ based on racist metrics, thus legitimizing colonial expansions. At the height of imperialism and in early ‘development’ discourse, poor countries were seen to be in need of outside intervention by European or American experts, to speed up their ‘development’ on a linear path of social and economic improvement. In the twentieth century, the linear narrative was economized, as general social progress was increasingly conflated with the expansion of production.38 Under capitalism, growth became the secular promise of redemption. The mechanistic understanding of nature also laid the foundation for eighteenth-century European economists’ understanding of ‘the economy’ as a separate area of social life that is measurable and predictable like clockwork – and which corresponded to changes in the world of work.39 This sector of the formal economy was characterized throughout the nineteenth century by the spread of gainful employment as a maledominated sector separate from the rest of life. At the same time, unpaid reproductive work became ‘housewifely’ – devalued, but necessary for the reproduction of labour power. Thus the invisibility and appropriation of unpaid reproductive work associated with wage labour still characterizes gender relations and the world of work today (see section 3.6).40 Different disciplinary technologies, manifested in institutions such as factories, the military, prisons, and schools, promoted the proletarianization of labour. This change in work led to the monetarization of more and more spheres of life and was accompanied by the suppression of relationships of reciprocity. 41 This proletarianization of previously subsistence-based communities, rooted in the system of wage labour, created a lock-in effect, where workers, too, depend on growth to satisfy their most basic needs as they are no longer able to survive outside of the capitalist system.42 The social implementation of abstract concepts of time and space, a process that took centuries to reach the entire globe, symptomatically stands for the abstract logic of capitalist modernity: the practice of the – scientific, and above all economic – production of equivalences between completely different concrete realities. The fact that labour, land, and many other things were made measurable and comparable, largely by means of an abstract standard of comparison expressed in money, created the conditions for exchanging everything for everything else.43 Growth, in this sense, is also a process of the relentless and often violent commodification and repeated colonization of natures, life worlds, and reproductive activities, all of which became increasingly shaped by market-mediated social relations – a process that is still ongoing.44 Growth as dynamic stabilization Modern societies dynamically stabilize through a continuous process of expansion and intensification in terms of space, time, and energy. 45 This means that modern societies inherently rely on growth to stabilize their institutions. These dynamics, while being based on processes of appropriation and exploitation as analysed above, did provide material prosperity to more and more people. While initially largely reserved to white men in the middle and upper classes in Europe, these sustained dynamics of growth also enabled successful social and political struggles that made this material standard of living accessible to an increasingly larger part of humanity, especially in the Global North, but also in the middle and upper classes of the Global South. This increasing democratization of material prosperity – from consumer goods such as sugar and tea for European workers in the nineteenth century to larger private homes, household appliances, cars, and travel in the twentieth century – again laid the foundation for the continued acceleration of economic growth. And – as a stabilizing mechanism for capitalism – the promise of rising levels of material prosperity through economic growth served to pacify social conflicts and to create consent for the technocratic, productivist politics of growth societies.46 This does not only apply to the capitalist core countries. Even the real existing socialist societies of the twentieth century were – albeit under different circumstances – fundamentally productivist growth societies. Under the pressure of competition between the Western and Eastern blocs, they also relied on increasing economic output and growing material prosperity in order to guarantee their social stability. 47 And, as we will explore throughout the book, the promise of a better life through growth also legitimized and thus stabilized uneven development globally – the promise of future growth made inequalities seem acceptable. Furthermore, dynamic stabilization goes beyond material prosperity. In fact, many of the social and political achievements people in modern welfare states have access to today, such as the right to vote, a minimum wage, health care, and a five-day workweek, were fought for by strong social movements and trade unions in the context of expansive and fossil fuel–driven modernity. The power of the strike in the twentieth century, for example, was closely linked to the need for the labour force to operate the facilities necessary for the mining, transport, and processing of coal and, consequently, their ability to effectively paralyse them. To highlight the intimate entanglements between the material properties of coal, which enabled coal workers to become the spearhead of a strong workers movement that successfully fought for welfare and participation, and the resulting mass democracy, the historian Timothy Mitchell has termed modern representative systems ‘carbon democracies’.48 The historian Dipesh Chakrabarty makes a similar argument: emancipation movements went hand in hand with the dynamics of fossil fuel–powered growth and were based on it: ‘The mansion of modern freedoms stands on an everexpanding base of fossil fuel use. Most of our freedoms so far have been energy-intensive.’49 And similar arguments can be made regarding other modern achievements. Indeed, the public institutions of modern societies – including the welfare state itself, which sought to pacify and constrain capitalism and which emerged from the great emancipatory struggles of the nineteenth and twentieth centuries – stabilize themselves through economic growth: they emerged within, contributed to, and are structurally dependent on expanding economies.50 This includes institutions such as pension systems, health insurance, unemployment benefits, long-term care insurance, public education systems, universities, and public infrastructures (roads and railways, water and sewage pipelines, electricity and telecommunications networks). Increasing production created surpluses and thus facilitated struggles for the distribution of wealth, the shortening of working hours, and social security systems.51 As also argued by Thomas Piketty, the structural tendency within capitalism to increase inequality could historically be counteracted in phases of high growth.52 It must be noted, however, that these achievements, rights, and freedoms were not the direct outcome of capitalist growth, but rather resulted from struggles from below. As the economic historian Stefania Barca points out, ‘health, wealth, longevity and security are not the result of global trade and capital, but of those forces which have opposed them.’53 Nonetheless, these struggles did occur within the context of economic growth and were fundamentally shaped by it – and this has important implications for a future beyond growth. In the nineteenth and twentieth centuries, the economic and social model of an expansive modernity, characterized by growth, was thus not only very successful in material terms but also enabled rising and hithertounknown levels of social, political, and cultural achievements and rights, mostly within the early industrialized capitalist centres, but in parts also in emerging countries and globally. The fact that key democratic, social, and cultural rights were thus fought for in the context of expansive modernity, and that within the growth paradigm societal progress became conflated with GDP growth, has laid the foundation for a powerful common sense, based on lived experience, that social improvements do indeed require economic growth and the development of the productive forces. This applies in particular to the Fordist regime, which prevailed mainly in industrialized countries from the 1920s to the 1970s. Fordism was a social constellation of production methods and power relations based on standardized factory labour (largely male bread-winners), rising productivity (based on fossil fuels and standardization), and rising wages (enabling increasing mass-consumer markets to absorb the rising output), which temporarily pacified the conflict between capital and labour mainly in industrialized countries. The very high growth rates of this period helped to create consumer societies built around a work-and-spend ethics and ample markets to increase production, which was key for capital to expand – as put by Henry Ford himself: ‘Cars don’t buy cars’. At the same time, high growth rates did translate to a certain democratization of prosperity – it was the period in which Western lifestyles of building houses in suburbs, driving cars, and owning washing machines became dominant.54 Today, even after decades of neoliberal welfare cuts and austerity, social memory of this era still powerfully links hopes of social improvement to growth. This experience of the democratization of prosperity, which was powerfully associated with growth, became the formative experience of entire generations in industrialized countries. Recently, the term ‘imperial mode of living’ was introduced to describe how this way of life, which has great capacity to stabilize capitalist centres, requires an uneven, imperial global structure that ensures global access to cheap resources, energy, and labour, while at the same time externalizing its ecological costs to Global South regions and the future. Driven by the global spread of its media representation, the imperial mode of living, with all its fossil fuel–based comforts and capitalist consumer goods, also became a global dream for many, even in the peripheral regions, who had thus far laboured to provide the foundations of this prosperity but were excluded from its benefits (see section 3.7).55 It is this experience of Fordist democratization of prosperity and its attachment to consumer lifestyles which the critique of growth today has to work its way through, at least in the early-industrializing countries. In fact, the legitimating narrative of the progressive nature of growth and the development of productive forces is so powerful that it also shapes the outlook of parts of the left. And the function of growth as a stabilizing mechanism remains one of its key justifications. However, this common sense is increasingly eroding: contemporary growth since the 1970s is showing diminishing social returns. In the capitalist core, ever higher economic output has failed to translate into a proportionate increase in well-being; this growth has not led to more equality (except in parts of Asia), because the fruits of growth have largely been captured by a small global elite; and, most importantly, continuous growth and the spread of consumer-oriented lifestyles throughout the world are producing ever more visibly devastating ecological and social effects globally. 56 These make clear that while continuous growth stabilizes social conditions in the core – where the benefits accrue – and has the capacity to mediate contradictions between capital and labour through the redistribution of production and surplus, this constellation becomes increasingly precarious with economic conditions deteriorating for many, even in the centres. And it comes at a price. Such contradictions are actually displaced towards other spheres of life and to the Global South. In effect, the globalization of the ‘imperial mode of living’ threatens to destroy the very achievements on which its ideological power rests. Growth is a powerful stabilizing mechanism of capitalist modernity – yet it also destabilizes the ecological foundations of human life on this planet. 2.3. Growth as a material process Growth, we have argued, is a culturally hegemonic idea in modern society. And growth is also a social process driven by accumulation, characterized not only by the relations internal to capitalism, such as capital and labour, exploitation, or alienation, but also by relations that define the struggles on its frontiers, such as appropriation, externalization, and unequal exchange. Growth, as a social process, dynamically stabilized modern societies. In this section, we discuss growth as a material, biophysical process: the accelerating movement and use of more and more resources, energy, land, consumable goods like food or smart-phones, and the resulting waste products and emissions – all of which are considered part of the ‘social metabolism’ of society. Going beyond critically analysing the ideology of growth and the monetary production economy, a critical theory of growth also includes analysing how growth appears in the material world, as a biophysical process, and how its expansive nature produces socioecological contradictions.57 One way to get an impression of this material dimension of growth is through scientific analyses that measure the weight of all the mass of the objects produced by humans – from buildings and infrastructure to plastic bottles and smartphones. This research in industrial and political ecology has generated some striking results: since around 1900, this ‘anthropogenic mass’, which consists mainly of concrete, aggregates, bricks, asphalt, and metals, has increased rapidly, doubling roughly every twenty years (see Figure 2.1). Today, human-made stuff equal to each person’s body weight is produced every single week for everyone alive globally. This ‘anthropogenic mass’, which at the beginning of the twentieth century accounted for only about 3 per cent of all biomass (all the trees, shrubs, other plants, animal bodies, and so on) on Earth, surpassed the overall biomass around the year 2020. The mass of produced plastics alone is double the mass of all the terrestrial and marine animals, including the bodies of humans.58 How can we conceptualize this material dimension of economic growth – and what ecological and social repercussions does it have? Figure 2.1. Biomass and anthropogenic mass estimates since the beginning of the twentieth century on a dry-mass basis. Source: Emily Elhacham, Liad Ben-Uri, Jonathan Grozovski, Yinon M. Bar-On, and Ron Milo, ‘Global Human-Made Mass Exceeds All Living Biomass’, Nature 588, no. 7838 (2020): 442–4. Accumulation as biophysical growth Economic growth not only appears as the ‘immense accumulation of commodities’ – the ever-expanding stream of commodified things and beings and the social relations making these possible. Growth is also experienced as biophysical and material change and as the accumulation of stuff. This includes transformations in our environments, as – driven by rising demand for energy – coal mines swallow villages and forests in Germany, the oil industry destroys livelihoods in the Niger delta, or rare earth mining in northern China – critical for electric cars – produces radioactive earth dumps, poisoned groundwater, and replaces Indigenous populations. Material growth is also experienced through ever larger cities, rising buildings, urban sprawl, or the construction of more highways. Or it appears as diverse agro-economic or pastural systems being continuously replaced by industrial agriculture, factory farming, or monocultural crop production for global agrobusiness. To understand this biophysical dimension of growth, degrowth offers an analytical apparatus that builds on biophysical and ecological economics (see also section 3.1). Centrally, growth can be analysed as the flows of energy and matter that are passing through societies – extracted in some useful form, put to work or consumed, and eventually emitted as waste. In this metabolic process, these flows are not only sustaining human and nonhuman bodies, but also the infrastructures and material artefacts that humans have built, which require energy and materials to be sustained and are analysed as ‘stocks’. From this ecological and materialist perspective, economic growth necessarily requires increasing throughput of energy and matter – a fact that tends to be disguised by the focus on GDP or ‘the economy’ in terms of monetary flows.59 As will be discussed in more detail throughout the book, while efforts to dematerialize the economy through increased efficiency and the use of renewable energy and resources might change the equation somewhat, they cannot escape the necessary materiality of economic growth.60 The social metabolism of capitalism relies mainly on non-circular flows of energy and materials that constantly run through ‘the economy’ and build up as rising stocks or are released as waste. This means that for production to happen, energy and matter must be extracted at a ‘source’, which creates ecological effects such as the depletion of ecosystems. And after the throughput has been transformed and consumed, it is excreted as waste into a ‘sink’ and must be reintegrated into ecosystems and biological cycles. Again, this causes ecological and biogeochemical effects such as plastic waste polluting oceans or, most critically, carbon emissions driving the climate catastrophe. At sources and sinks, where capitalism encounters nature, the ecological contradictions resulting from accumulation and growth as a material process manifest most clearly – presenting both resistance to capital as well as opportunities for further innovation and renewal. Yet, as will be discussed in depth later, flows are subject not only to economic dynamics, but also to the laws of physics and thermodynamics – which has far-reaching repercussions for the prospects of infinite growth of throughputs, and thus also for the prospects of endless accumulation (see section 3.1). Within capitalism, the flow of energy and matter through the economy must constantly be kept going or accelerated to increase the output of commodities and thus avert the ever-present spectre of overproduction. As argued by Eric Pineault, to absorb surplus capacity in the form of unused machines (fixed capital) or uninvested profits, output in mass consumer societies is managed in specific ways that allow for more growth: Commodities, even the most basic, are designed to maximize output consumption: they don’t last long, they are overwrapped, they are disposable or they depend on energy and matter thirsty artefacts that households must collect to enjoy them … It is not only that the output must be absorbed and consumed, but it must be consumed in such a way as to make room for the absorption of a continuously expanding output. This is growth.61 Of course, this material growth, which is driven by competitive efforts to impede the structural crisis of overaccumulation, has disastrous effects at both source and sink. New research has calculated the total amount of resources and energy that is wasted due to throughput being directed by accumulation; it concludes that every year the global economy ‘mismanage[s] around … 49% of the food produced, 31% of the energy produced, 85% of ores and 26% of non-metallic minerals extracted, respectively’. Consequently, natural resources are being depleted, ecosystems are polluted, and livelihoods depending on these are destroyed.62 Fossil fuels play a particularly central role in the social metabolism of capitalism.63 Previous societies were dependent on renewable forms of energy. These are ultimately derived from solar energy concurrently in circulation – mostly biomass and land, but also wind and water, and are limited in their ability to scale up production and cannot easily be transported. Thus, people were primarily dependent on available land, biological processes, the specific temporality of plant and animal life, and unchangeable phenomena such as the weather. Fossil fuels fundamentally transformed all that – by giving access to the stored energy of millennia of past photosynthesis, these underground reserves provided an extremely concentrated, powerful, and cheap form of energy. Thus, the entire dynamic of capitalism changed when, in the early nineteenth century, British industrialists started to systematically use coal to fire steam engines. By creating a powerful ‘prime mover’ that over time came to power anything from the spinning jenny in the cotton factory to Elon Musk’s spacecraft, a particularly dynamic and expansive social formation was unleashed: ‘fossil capitalism’.64 Fossil fuels made it possible to produce increasingly independently of time and space by enabling a constantly available flow of highly concentrated energy that could be increased almost at will, regardless of the specificities of a location. It thus dramatically increased the power of capitalists over the workforce and the production process, which could move wherever labour was cheap and obedient. It also provided the material and energetic basis not only for the expansion of industrial wage labour, but also a previously unknown increase in productivity, an entire range of new mass-produced materials such as steel, cement, and plastic and new forms of increasingly rapid mobility. 65 During the nineteenth and twentieth centuries, the continuously increasing use of fossil fuels has fundamentally transformed almost all areas of modern societies – from the way we live, fight wars, or grow food to the specific forms of nation-states and geopolitics, gender roles, or the prevalent ‘carbon culture’.66 Fossil fuels have powered not only economic expansion during this period, but also the increase in societal throughput and the acceleration of other core variables of the Earth system and related social trends. The capitalism of continuous economic growth that we know is fundamentally a fossil capitalism. And while renewable energy has grown exponentially in recent years, this is still comparatively minor and partly offset by the simultaneous growth of fossil fuel energy – instead of a global energy transition, we are largely seeing energy additions (see Figure 2.2).67 Figure 2.2. Global direct primary energy consumption. Even as renewables increase exponentially, they are dwarfed by increased use of fossil fuels. Source: Vaclav Smil, Energy Transitions: Global and National Perspectives (Santa Barbara: Praeger, 2017), and BP Statistical Review of World Energy; Our World in Data, https://ourworldindata.org/grapher/global-primary-energy. The great acceleration and ecological crises The material and social dynamics ushered in by this economic expansion are often illustrated with the now iconic ‘great acceleration’ graphs. Scientists have calculated and visualized a series of socio-economic and Earth system trends between the years 1750 and 2010.68 They show that sustained growth in its various dimensions is a relatively new phenomenon. Only since the nineteenth century have key measurable variables – such as population, water consumption, fertilizer consumption, urbanization, the construction of dams, transport, and so on – begun growing significantly. This process accelerated even more in the middle of the twentieth century, and its trajectory remains largely unbroken to the present day (see Figure 2.3). To understand the trends of the great acceleration, we need to interpret them not only in relation to the physical growth of societies, but as resulting from the dynamics of accumulation as discussed in the previous sections.69 Figure 2.3. The great acceleration. Source: Will Steffen, Wendy Broadgate, Lisa Deutsch, Owen Gaffney, and Cornelia Ludwig, ‘The Trajectory of the Anthropocene: The Great Acceleration’, Anthropocene Review 2, no. 1 (2015): 81–98. This great acceleration has irreversibly changed human life and planet Earth. The concept of the ‘Anthropocene’, coined by Paul Crutzen and embraced by natural scientists, ecologists, geologists, and historians, describes the age in which humanity itself has become the dominant geological force on Earth. But it is not the abstract ‘anthropos’ (human being) who is responsible for ecological changes or who has produced them, but a specific mode of (re-)production based on growth and expansion. Some therefore speak of a ‘capitalocene’ or ‘growthocene’.70 And despite efforts to delink the growth of GDP from material growth (emissions, material throughput, and energy use), these trends have continued to go up in the aggregate, quickly pushing the global Earth system beyond the limits recommended by scientists. Indeed, a multiplicity of studies show clearly that most of these trajectories of material growth cannot continue. Already in 1972, the ‘Limits to Growth’ report to the Club of Rome used an at-the-time groundbreaking computer model to show that continuous rates of growth of economic and material variables would most likely lead to the depletion of key resources by the 2030s. The material limits to growth, this muchdiscussed report stated, would also imply limits to economic growth in general. In the decades since, different groups of scientists have repeated the modelling from the report with contemporary data and showed that with the exception of some aberrations, current data map quite accurately to the models from 1972.71 Since then, more and more scientific evidence has cast doubt on the prospects of continuous biophysical growth over the next decades – the growth of stocks and flows of human-made matter, or of the use of energy. This research strengthened the claim that physical limits will eventually also imply an end to economic growth itself.72 In 2009, Johan Rockström’s team at the Stockholm Resilience Centre identified nine different ‘planetary boundaries’ – thresholds which, when crossed, would trigger unpredictable ecological breakdown. Research has since shown that the global economy has already crossed five: irreversible climate change, mass species extinction, excessive land use, the overburdening of the nitrogen cycle, and pollution by novel entities including plastics and chemicals. The global transformation of nature has already exceeded the ‘safe operating space for humanity’. Regarding the other four boundaries – ocean acidification, the depletion of the stratospheric ozone layer, and global freshwater usage – only regional overuse has occurred thus far, but the situation is deteriorating.73 Exceeding only two of these planetary boundaries – namely, climate change and the loss of biodiversity – has the potential to fundamentally destabilize the Earth system. However, it must be noted that these planetary ‘boundaries’ are not absolute barriers whose transgression immediately leads to general ecological catastrophes or the end of growth. In particular, the significance of these boundaries is fiercely contested because they affect people very differently, above all depending on their geographical location and their positions in relations of power and domination. However, they do provide a good indication of which systems we are pushing to their limits, beyond which we end up in a future of uncharted, non-linear tipping points. These scientific, empirically rigorous findings justify the conclusion that it is well past time for wide-scale, assertive, and comprehensive action. And, if they were to be reconceptualized as ‘societal boundaries’ resulting from capitalist social relations, they demonstrate how societies can react differently to these boundaries, including through self-limitation.74 Even just to limit climate change driven by human activity – which alone could endanger the survival of large parts of the future human race and other living beings – greenhouse gas emissions must be reduced to zero in less than three decades. A formidable challenge, given the centrality of fossil fuels to the social metabolism of capitalism discussed above. Yet, even if this were to happen, it is uncertain whether self-reinforcing feedback cycles would not continue to drive the Earth system beyond planetary tipping points, preventing climate stabilization and leading to continuous warming and a ‘hothouse Earth’.75 But it is not just climate change that we are up against. The great acceleration is affecting all aspects of human–nature interactions – from our water systems to the air we breathe, biodiversity, soil health, the sixth mass extinction, and increased risk of zoonosis, where encroachment into animal habitats leads to novel viral strains causing global pandemics. The writer Charles Eisenstein calls this process a ‘death of a thousand cuts’,76 where climate change itself is just one aspect of the multi-faceted degradation of global ecosystems. Of course, these are only some of the most prominent frameworks that analyse how growth as a biophysical process is disrupting biogeo-chemical natural systems, approaching, or even surpassing dangerous and partly irreversible tipping points. Yet there is clear and mounting evidence that this process of material expansion – which began with the beginning of industrial, fossil fuel–driven capitalism and accelerated in the 1950s, coinciding with the development of the growth paradigm – is today running up against multiple limits. One of the most distinct signs of the approaching limits is the rising social resistance against the ideology of growth, against social dynamics of accumulation, and against their material form – biophysical growth. People all around the world are resisting, as part of a diverse and growing network of movements against environmental injustice: land defenders, peasants, workers, and Indigenous peoples fighting against successive incursions on their land, against extraction of resources, against demeaning and alienating jobs, and for collectively defined self-limitations and a just transition to a dignified and ecologically sustainable economy. 77 2.4. The end of growth? What is the future of growth? Of course, no one knows. But the idea that the global economy will continue to grow at 3 per cent each year, thus matching some projections and the expectations of what is considered ‘normal’ in economics and public discourse, might turn out not only to be a nightmare (ecologically, but also for many other reasons, as discussed in the next chapter) but also a fantasy. Compounding a 3 per cent annual growth doubles the size of the economy every twenty-four years and, by the end of this century, would lead to a global economy eight times larger. How this can be squared with ecological and social limits is difficult to conceive. However, since the 1970s, economic growth itself has started slowing, beginning in the early industrialized countries. In the US, Europe, and Japan, growth rates have been declining significantly since the 1970s, a process discussed as ‘secular stagnation’ by economists. The reasons for this are manifold and intertwined. They range from the political structural break from social welfare states towards the neoliberal model, to the tendencies for markets for goods to be saturated, intensified international competition, declining productivity growth, and the financialization of the global economy. Another important factor has been rising resource prices – it is no coincidence that secular stagnation was triggered by the oil crisis of the 1970s. And since the global economy has now become a behemoth, relative growth can only be achieved with ever greater expenditure on materials and energy, which is becoming ever more expensive to provide, in particular with declining rates of productivity. 78 In the long run, the economy does not seem to be developing in the way of the ‘hockey stick’ we have become accustomed to – stagnating for much of human history and then accelerating into a continuous and almost vertical ascent, like the curve of a ‘J’. Instead, the regions in which capitalist industrialization began earliest now show a transition to a trajectory that can be more adequately described as an ‘S’-curve, in which acceleration slows down and finally comes to a standstill. It could be that, in the long term, the rapid growth of parts of the world economy between the nineteenth and twentieth centuries turns out to be a historical exception.79 But also in the short term, the future of growth is uncertain – not only given the crisis-tendencies inherent to the social process of accumulation, but also due to the various ecological, social, and material limits of growth. As we look towards the next decades, we will be facing multiple, simultaneous crises, each a result of a global economy based on growth – and increasingly one based on growth in crisis. On the one hand, we are already facing economic stagnation, which is sending tremors through the system of ‘dynamic stabilization’ and upending the expectations of those enjoying an ‘imperial mode of living’, leading to new forms of popular reaction in industrialized and middle-income countries, as well as increasing social divisions. On the other hand, our current energy system, based on fossil fuels, is fast causing a breakdown in the stability of the climate – itself a foundational precondition for welfare, prosperity, and even the very existence of complex human societies. Beyond climate change largely caused by carbon emissions, many parts of the world are facing ecological breakdown and public health crises due to ecosystem degradation, pollution, and high levels of toxicity in food and the environment. All these ecological crises hit the poorest – as well as those oppressed by intersectional hierarchies such as race, class, and gender – first and hardest. These multiple crises are the result of a system dependent on, and driven by, growth. The main objection to the analyses presented here, which highlights how intricately interwoven the material dimension of growth is with the social process of accumulation, posits that while growth might have been very material and destructive in the past, it is already and can further be dematerialized in the future. The hope is that by shifting to renewable energies, increasing energy and resource efficiency, and through recycling, GDP can be decoupled fast enough from both the use of resources (the ‘source’ problems) and the creation of waste and emissions (the ‘sink’ problems). And all of this is already happening in some industrialized countries, the narrative of green, dematerialized, and cyclical growth claims. However, this hope is based on false assumptions and lacks evidence. While research shows how carbon emissions, GDP, and material footprint have become slightly less coupled, they are still all increasing at a critically dangerous rate (see Figure 2.4). As will be discussed in detail throughout the book (in particular, section 3.1), all the signs of dematerialization or decoupling, as welcome as they are, are simply not enough – growth is still sending us over a cliff. Figure 2.4. Relative change in key global economic and environmental indicators from 1970 to 2017. The graph shows how the global material footprint (MF, equal to global raw material extraction) and global CO2 emissions from fossil fuel combustion and industrial processes (CO2 FFI) changed compared with global GDP (constant 2010 USD). Indexed to 1 in 1990. Source: Thomas Wiedmann, Manfred Lenzen, Lorenz T. Keyßer, and Julia K. Steinberger, ‘Scientists’ Warning on Affluence’, Nature Communications 11, no. 1 (2020): 1–10. In this chapter, we have discussed growth as expanding social metabolism of society with nature, which in ever faster rhythms allows more and more resources to flow through ‘the economy’ and remain as waste and emissions. We have also discussed growth as a social process of mutually reinforcing and dynamically stabilizing forces of acceleration, escalation, and intensification. And we analysed growth as an ideology, focusing on the making and power of the growth paradigm. With regard to each of these, growth ultimately undermines the foundations on which it is based. Yet the hegemony of the growth idea still persists. This is where the critiques of growth come in, which we will discuss in detail in the third chapter and which continue the arguments only outlined here. For a transition to a degrowth society – as we will discuss in chapters 4, 5, and 6 – all three dimensions of growth must be addressed. First, degrowth takes seriously the material dimension of growth in all its complexity, drawing attention to what this means for a future of global justice. Second, degrowth must seriously examine the question of how the self-reinforcing growth dynamics of expansive modernity can be overcome without jeopardizing the social, cultural, and democratic achievements that have been accomplished, largely through social struggles, but also within the context of growth societies. And third, degrowth must critically engage with and dismantle but also transform the promises, myths, and hopes associated with the growth paradigm. 3 Critiques of growth When first confronted with the word ‘degrowth’, many people react by calling its proponents anti-modern (You want us to go back to living in caves!), privileged (You want people to have less but many people are already poor!), or apolitical (You don’t talk about the root of the problem, which is capitalism!). In part, people often react this way because growth continues to be seen as the provider of all the good things that society offers, so to go against this common sense raises many people’s ire, both on the right and on the left. Another reason is that, while it is easy to react negatively to the word ‘degrow th’, truly understanding the degrowth framework takes a much more dedicated engagement with the arguments it advances – which are based on both scientific evidence and political theory. In the previous chapter, we took you through some of the history of growth – from its more recent rise as a paradigm of governance to its deeper roots, both material and social, within capitalism. Uniquely among leftist critiques of capitalism, degrowth offers a rigorous understanding of these growth dynamics. In this chapter, we describe the various critiques of growth upon which degrowth literature has drawn, assembling in one place the different frameworks that together make up a degrowth perspective. Degrowth, we argue, can be understood as a synthesis of different strands of growth critiques, which analyse the dynamics of growth in modern societies from various perspectives. This is not to say that degrowth does not offer any positive proposals beyond critique. In the next chapter, we present the vision and proposal at the core of degrowth. In this chapter, however, we focus on critique. We claim that there are, central to degrowth, seven distinct and overlapping lines of argumentation each critical of growth: ecological, socio-economic, cultural, anti-capitalist, feminist, antiindustrialist, and South–North critique (see Table 3.1). A comprehensive degrowth perspective should incorporate all of them.1 Critiques of growth Economic growth … Ecological critique … destroys the ecological foundations of human life and cannot be transformed to become sustainable Socio-economic critique … mismeasures our lives and thus stands in the way of well-being and equality of all Cultural critique … produces alienating ways of working, living, and relating to each other and nature Critique of capitalism … depends on and is driven by capitalist exploitation and accumulation Feminist critique … is based on gendered over-exploitation and devalues reproduction Critique of industrialism … gives rise to undemocratic productive forces and techniques South–North critique … relies on and reproduces relations of domination, extraction, and exploitation between capitalist centre and periphery Table 3.1: The seven forms of growth critique central to degrowth That said, we do acknowledge that there is some truth to the criticism that growth critiques can be anti-modern or regressive. Certainly critiques of growth can lead to apolitical or misanthropic conclusions. For example, without a critique of capitalism or a positive vision of human societies, growth critiques can easily go down the road of focusing only on false causes like population growth or ‘human nature’, so prominent within Western environmentalism.2 Alternatively, without a feminist perspective, growth critiques tend to reproduce gender inequalities, stereotypes, and binaries and strengthen rather than undermine the gendered division of labour. These reactions to the problems of growth can only advocate overcoming the problem in limited, even regressive, ways. Even if the main thrust of degrowth differs markedly from right-wing extremism, it is still necessary to continue to ward against such contaminants. As the sociologist Dennis Eversberg notes, growth-critical positions are particularly at risk of being appropriated from the right, who often focus on blaming the interest rate, the monetary system, or overpopulation for global problems and frame the solution as the return to an allegedly better, more sustainable state of ‘natural’ or ‘original’ communities.3 In contrast to these perspectives, the central thrust of degrowth should be understood as a global justice perspective. As we argue in the conclusion of this chapter, only a holistic approach, one which takes into account the several critiques we outline here, can safeguard degrowth against rightwing appropriation and respond effectively to the current crises. Before we go further, we would like to offer some clarifications on these different strands of the degrowth framework. In this chapter we focus, on the one hand, on critiques of growth that are often seen as key ‘sources’ of degrowth.4 On the other hand, however, we also discuss critical approaches that are less frequently heard but that are key to framing degrowth accurately – or likewise those that have been important historically in debates concerning growth. All these forms of critique come from different historical and social contexts, and their argumentation takes place on different levels and with different degrees of abstraction. There are overlaps and cross-fertilizations. Not all forms of criticism are completely critical of growth, and only some of the authors see themselves as part of the degrowth spectrum – and some formulated their arguments long before the emergence of a degrowth discourse. But they all make a specific contribution to a comprehensive critique of growth adequate for our current predicaments. The common basis of these different growth critiques is the deconstruction of the hegemonic belief that economic growth per se is a good thing. To this end, the logic and central assumptions of orthodox neoclassical economics are attacked with various arguments. All critiques point to the fact that human and non-human living beings are part of complex, interdependent networks of relationships. A purely economic description cannot adequately capture them and conceals rather than explains the actual logics of social and socio-ecological relations. Degrowth thus criticizes the universalization of economic rationality as manifested in its ideological orientation towards growth and the replacement of complex networks of relationships by an alldetermining number: GDP. In the following, we present each of the seven forms of critique in a separate section. We begin each section with a summary of the core arguments, briefly describe the historical development of this critique, and then explain some key arguments in more detail. Finally, we discuss their significance for the broader degrowth discourse, once again exploring how degrowth critiques can inoculate themselves against reactionary, conservative approaches. 3.1. Ecological critique Infinite growth is not possible on a finite planet. The core message of the ecological growth critique can be summarized in this oft-repeated commonplace argument. Even if this is only one of several forms of criticism that make degrowth necessary, for many it is the starting point of a critical engagement with economic growth – therefore we will start with it as well. Ecological growth criticism, however, goes beyond this popular statement. On the one hand, it shows that economic growth is not sustainable and cannot be made sustainable by any other modulations of growth (i.e., ‘green’, ‘qualitative’, or ‘smart’ growth), by technological progress (increases in efficiency, digitalization, and so on), or by merely shifting the resource and energy base (via renewable energies, say, or recycling). On the other hand, the ecological growth critique does analyse the reasons for this structural unsustainability of the growth-oriented, productivist, and capitalist economic system. Rebound effects, entropy, criticism of the green economy, and environmental justice are central keywords. Another important aspect is the analysis of the fundamental level at which human societies are shaped by their metabolic relationship with nature and how these society– nature relations are deeply inscribed in modern societies. Ecological growth critiques take up arguments from environmental and environmental justice movements, sharpen them, and bring them in exchange with scientific discussions. Even though, in their modern forms, these date back at least to the nineteenth century, the discussion about the connection between economic growth and ecology has gained momentum only since the 1970s. In chapter 2 we already discussed a critical theory of growth, whose analysis of the material dimension of growth integrates some of the ecological growth critiques. Further strands of the ecological critique came, first, from the developing field of ecological economics, and especially from the thermodynamic arguments of Nicholas GeorgescuRoegen. They also came, second, from the environmental justice movement and from eco-Marxist analyses of social metabolism. Third, they relied on empirical material flow analyses, studies on resource scarcity, and studies on decoupling environmental impact from economic growth. Ecological economics and the law of entropy Ecological economics developed from critiques of neoclassical economics, which is oblivious to ecological processes and their importance to economic activities. Let us begin with how the laws of physics determine and shape growth. It may perhaps seem self-evident to say that the economy, like everything else, must obey the laws of physics. However, mainstream economics rarely acknowledges this fact. Neoclassical models conceptualize the economy as money-mediated and self-contained processes of circulation of labour and capital, money and goods between households and companies, all of which can reproduce themselves again and again. Growth, in this model, is due to savings and investments and the resulting increase in knowledge, technology, and capital. Such a circularflow model of the economy, with which the textbooks of economics begin to this day, has been fundamentally challenged: to give one example, neither nature (in the form of energy, raw materials, and land) nor reproductive work (as indispensable prerequisites of the formal economy) appear in it. As an image central to ecological economics depicts, the economy is embedded in a society (in the form of laws, social institutions, or moral concepts) without which it could not function; and both the economy and society in turn are embedded in nature.5 The circular flow model is the ‘original sin of modern economics’, as the mathematician and economist Nicholas Georgescu-Roegen stated, because it creates the illusion that the economy does not depend on resources, energy, and sinks, and can thus continue to expand indefinitely. 6 In the 1960s and 1970s, he developed some of the central building blocks both for ecological economics and for later degrowth discourses through a rigorous analysis of the biophysical side of economic activities. He argued that economic development is necessarily integrated into physical and biological processes and therefore cannot ignore the limits arising from physical laws, especially the law of entropy. 7 In The Entropy Law and the Economic Process, published in 1974, Georgescu-Roegen showed how what we call the economy, which is understood largely as a system of market exchange, is in fact a complex system of flows and stocks of energy and materials, each of which has different properties and potential for sustainable (re-)use. The expenditure of energy or the use of any material tends not to be fully renewable in the long term, since each time energy or material is transformed from one form to another, that substance becomes lower quality. Fossil fuel– driven economies are rapidly using the limited supply of highly concentrated energy stored during millennia of photosynthesis – the sun being the only source of energy entering the otherwise largely closed system of the earth. To switch to a fully renewable economy, we would need to transition to a largely solar-powered economy. However, Georgescu-Roegen argued that, unlike fossil fuels, solar energy ‘comes to us with an extremely low intensity, like a fine rain, almost a microscopic mist’.8 Imagine trying to catch fine rain: you cannot do it with a bucket. To do so, we would need to transform our current systems of energy capture and storage completely, creating a massive infrastructure (of solar panels, wind turbines, bioenergy plants, tidal turbines, and, most importantly, technologies to store that energy, such as batteries) that relies on material resources, which are, unlike sunlight, non-renewable. Such a solar-based economy must manage with existing materials and will thus in the long term have to limit growth. Technological progress and non-fossil energy sources (such as the sun, wind, water, or biomass) cannot beat the entropy law in the long term, especially since resources and land are inherently limited. From this analysis, Georgescu-Roegen deduced that if we begin from an analysis that is grounded in the laws of physics, we can only conceive of an economy that consumes less and less energy and material, since nothing can be 100 per cent recycled and since capturing renewable energy depends on material resources, which are themselves limited. Georgescu-Roegen also formulated initial thoughts on the form such an economy must take, anticipating some of the central degrowth proposals. Thus, it is no coincidence that the word décroissance, although Georgescu-Roegen did not use it himself, first became known through the title of a 1979 French translation of his writings titled Demain la décroissance. These arguments highlight two basic facts. First, every economy is embedded within an environmental context and therefore is subject to natural laws such as those of physics and thermodynamics. Second, an economy that grows endlessly must make trade-offs with regard to material and energy use, since each form of energy has different characteristics in terms of storage, material intensity, renewability, transportation, and the time and space they require. While this does not prove in itself that endless growth is impossible, it shows how, the bigger an economy, the more difficult it becomes to maintain, and the more difficult it becomes to switch to more sustainable forms of energy that are not as dense, concentrated, and transportable as fossil fuels, without reducing overall energy use. This insight applies to all economic systems, not just our own.9 Vaclav Smil, in his recent book Growth: From Microorganisms to Megacities, brings the study of physics and economics of growth to a new level. In a wide-ranging analysis of growth in multiple systems – from the biological to cities to economic trends – Smil underlines that, in all systems, growth may look to be exponential but eventually tends to have decreasing growth rates until it reaches its material and thermodynamic limits. Thus, societies currently experiencing growth may have the impression that things will continue as they are, but they usually are just within an exponential curve that will eventually flatten, or even result in whole-scale collapse. More broadly, Smil’s work demonstrates in exhaustive detail how all economic activity, regardless of social organization, is subject to material, ecological, and physical limitations. In essence, his argument, which aligns closely with that of Georgescu-Roegen, is that all available evidence suggests that growth is finite. Any society that relies on compound rates of economic growth will eventually face ultimate limits, which manifest themselves in the breakdown of the complex ecosystems upon which growth relies. Smil stops short, however, of suggesting models for how to avoid collapse; and, what’s more, his work does not take into account the role played by ideology and hegemonic, interlocking social dynamics in perpetuating growth. As we underline throughout this book, an important aspect of the degrowth framework involves combining a material analysis of the growth of the economy with an understanding of its structural roots.10 Another problem, related to the one highlighted above, is that increasing economic complexity also locks in future material and energetic throughput. For example, as more infrastructures organized around fossil fuels (such as highways and container shipping ports) are built, the more society becomes ‘locked in’ to non-renewable sources of energy, and the more work it takes to disassemble that system and create a system based on renewable energy. These mutually reinforcing dynamics of growth become increasingly coupled to each other, making it more and more difficult to change energy sources but also to address the increasing disorder (through pollution, environmental degradation, and social strife) created by a reliance on a single, highly concentrated source of energy – in our economy’s case, fossil fuels.11 Social metabolism and the metabolic rift It was from this understanding – the scientific investigation into the physical basis of economies – that political economists started to develop an understanding of what is called ‘social metabolism’. This is a key term in the degrowth literature and fundamental for an accurate understanding of the material conditions of growth. In physiology and biology, metabolism is understood as a system that exchanges and balances nutrients of an organism. A human organism, for example, takes in food, processes it to create energy, uses parts of it to continuously rebuild the body, and excretes the rest. The concept of metabolism began to be applied to wider ecological and social systems in the nineteenth century with the development of the science of ecology. Scientists began to use the term ‘metabolism’ (in German, Stoffwechsel) to apply to biochemical processes in natural systems, not just in organisms. Karl Marx, interested in the development of these new natural sciences, started to explore what he called social metabolism: the material and energetic exchange that allows a society to reproduce itself, produce, stabilize, and grow. 12 Marx, who coined the term ‘social metabolism’, described it as the dynamic relationship between humans and nature. This interchange was dependent on complex and ecologically specific dynamics, such as the nutrient capacity of the soil or the availability of various forms of energy. Since societies depend on biological and ecological functions, these limit the potential of economic activities. This suggests that capitalist development, which relies on infinite accumulation, has yet another tendency towards crisis.13 Marx, in his investigations of capitalism, also became concerned with the way in which a capitalist economy’s social metabolic processes systematically disrupt natural metabolic processes – such as by producing waste (sewage, pollution, plastics) that can’t be absorbed by ecosystems but rather that degrades them. As Marx pointed out, [Capitalist production] disturbs the metabolic interaction between man and the earth, i.e., it prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; hence it hinders the operation of the eternal natural condition for the lasting fertility of the soil.14 John Bellamy Foster, in his study of Karl Marx’s ecological politics, has called this dynamic the ‘metabolic rift’.15 Thus, Marx’s work and a revival of eco-Marxism highlight the importance of understanding the material and ecological basis of any social system, and the way by which social metabolism fosters or disrupts natural cycles and metabolic exchanges, contributing to the dynamics of capitalist crisis (see also section 3.4). Following the development of ecological economics, scientists began to trace the social metabolism of different economies by measuring aggregate material and energetic ‘throughput’ – basically, the total ‘stuff’ that economies consume. Different economic systems, historically, have had vastly different rates and forms of metabolism.16 The measurement of social metabolism has become a key basis for the empirical evidence underlying whether economic growth can be decoupled from material and energy throughput. Indeed, with the advent of tools to empirically measure metabolic impacts such as carbon and water footprints, scientists have also come closer to understanding how the aggregate throughput of a society is linked to environmental impact.17 The study of social metabolism is important for our understanding of the material basis of the economy for several reasons. First, it highlights once again how nature and society are not separate objects but are connected through biological, chemical, and physical interchanges. It thus underlines how social dynamics can adversely affect ecological systems, and how this depends on complex interlocking systems, each of which has its own unique traits. For example, the social metabolism of speeding up the water cycle through erosion-prone agriculture has very different impacts on society than speeding up the carbon cycle through burning fossil fuels – since water and carbon each have different properties and effects (on the air, on the soil, in the ocean, and so on). Second, the theoretical perspective that focuses on ‘social metabolism’ and the empirical measurement of it bring to light a part of the economy that is veiled by most economic measurement tools like GDP. Third, measuring the aggregate social metabolism of a society becomes a political object in itself, as it has the potential to empirically assess the relationship between economic growth, material and energetic throughput, and ecological devastation – as well as to challenge unequal distributions of the negative effects of interlinked processes (see section 3.7). In summary, an understanding of social metabolism is necessary for comprehending the material form that any economy takes and determining whether it is sustainable or not. Decoupling and rebound effects A large number of empirical studies on the relationship between economic growth and environmental degradation or resource consumption are also at the foundation of the ecological growth critique. This leads us to perhaps the most important controversy in the ecological critique of growth: the question of decoupling. This field of research makes it increasingly difficult to deny that past economic growth has been a central driver of economic destruction. What is controversial, however, is whether current and future economic growth can be decoupled from environmental impact. As we noted at the end of the previous chapter, a prominent thesis by advocates of green growth states that technological progress and an efficiency revolution can ‘decouple’ growth from environmental destruction. By switching to green sources of energy on a large scale, as well as by improving efficiency, countries could see green growth throughout the next decades and beyond, while environmental burdens decrease and emissions decline.18 Criticism of these claims is the central starting point for degrowth. The debate is complex and involves both theoretical and empirical arguments. To begin with, the widely held idea that productivity improvements due to technological innovations lead to savings in resources and energy is historically misleading and factually wrong. Productivity increases were, in effect, largely caused by the use and appropriation of cheap labour and nature, by the increasing use of fossil fuels, and by ecological plundering and the shifting of costs to the future and to the countries of the Global South. Furthermore, the ‘rebound effect’ has had an important role to play in the difficulty of reducing environmental impact while growth increases. The debate about the rebound effect goes back to the paradox discovered as early as 1865 by the British economist William Stanley Jevons: increasing the efficiency of energy and material use often leads to more, and not less, consumption of this energy or raw material. Even though this mechanism has long been neglected in neoclassical economics, a rising number of empirical studies have shown how rebound effects counteract decoupling. Rebound effects are defined as excess demand due to an increase in productivity. Studies show that, often, savings due to technological improvements are offset by an increase in demand. For example, more efficient combustion engines do not lead to lower energy use or CO2 emissions when cars become heavier, people drive more, and the money saved on fuel is spent on other CO2 -intensive consumption. Rebound effects are extremely diverse, affect different levels (households, companies, economies), and sometimes reinforce one another. The sociologist Tilman Santarius distinguishes between financial, motivational, habitual, industrial, economic, and structural rebound effects. Empirical studies show that all these rebound effects together directly offset at least 50 per cent of the efficiency gains through new growth, and in some cases significantly more – even at times reaching what is called an ‘overshoot’, where efficiency improvements lead to additional net consumption.19 The debate on decoupling often lacks clarity on what kind of decoupling is actually necessary to achieve sustainability goals and have continuous growth. While there is wide evidence for some forms of decoupling, what we actually need is a decoupling in all key sustainability indicators (not only carbon emissions, but also biodiversity loss, land use, resource consumption, and so on) that is global (not just happening in some countries or regions), absolute (not just relative), permanent (and not just due to temporary circumstances, low-hanging fruits, and so on), fast enough (and not just possible in the long-term future), and strong enough to achieve agreed sustainability targets such as the 1.5°C limit for global warming, while taking global equity considerations into account.20 Fortunately, there are some signs of global relative decoupling and of some regional absolute decoupling. For example, the global energy intensity (amount of energy per unit of global GDP) today is almost 25 per cent below that of 1980, and the carbon intensity of the global economy (amount of CO2 per unit of global GDP) has also declined by almost 1 per cent per year in recent decades.21 However, while the carbon intensity of the global economy continues to decrease, CO2 emissions have also continued to rise – by more than 60 per cent since 1990. What is needed is not relative decoupling, but absolute decoupling, in which resource consumption, environmental damages and emissions decrease in absolute terms and sufficiently fast, while the economy grows. And there is no evidence for global absolute decoupling of economic growth from environmental impacts, neither in terms of CO2 emissions nor biodiversity loss, land-use change, plastic pollution, or the aggregate level of anthropogenic resource use (which is a key indicator for environmental damage generally).22 And while some temporary, localized absolute decoupling has taken place, in particular in some Global North countries with low growth rates, there is no evidence to show that it has, or can, occur at the scale needed to become permanent and global, nor to do so fast enough. For example, between 1980 and 2008, countries such as Canada, Germany, Italy, and Japan decoupled their domestic material use from economic growth, and the G8 as a whole halved their domestic material consumption. Yet, when measured in absolute terms and including embedded resources in trade, material footprint closely tracks GDP in all wealthy nations, and, despite dips in GDP rates, continues to grow at an unsustainable rate.23 Furthermore, only fourteen countries have absolutely decoupled GDP growth from both production- and consumption-based CO2 emissions – and this was aided by slow economic growth and, for several, was only temporary. 24 Yet even in these countries, achieved mitigation rates remain very far from what is necessary to achieve climate targets, in particular if equity considerations are taken into account. To put the case directly: the transformations of the Global North economies necessary to achieve annual emissions reductions of around 10 per cent, as is necessary to avert a climate emergency, can only be achieved without economic growth and will most likely result in a reduction of GDP. 25 A recent systematic review of decoupling, synthesizing the evidence emerging from 835 peer-reviewed articles, concludes that while relative decoupling is common and while some small-scale and slow absolute decoupling can be seen in certain areas in recent years, the absolute decoupling we need is highly unlikely: Large rapid absolute reductions of resource use and GHG emissions cannot be achieved through observed decoupling rates, hence decoupling needs to be complemented by sufficiency-oriented strategies and strict enforcement of absolute reduction targets.26 Another analysis of historical trends and model-based projections concludes: (1) there is no empirical evidence that absolute decoupling from resource use can be achieved on a global scale against a background of continued economic growth, and (2) absolute decoupling from carbon emissions is highly unlikely to be achieved at a rate rapid enough to prevent global warming over 1.5°C or 2°C.27 Of course, this could theoretically change in the future – yet given what we know, this is highly unlikely, and the large-scale and high-speed energy transitions that would be necessary, including negative emission technologies, bear considerable risks regarding not only their feasibility, but also their sustainability and justice.28 Furthermore, next to the rebound effects discussed above that will compensate some of the efficiency gains, there are other mechanisms that make sufficiently fast absolute decoupling very unlikely – among these are the possibility of rising energy and resource expenditures, problem shifting to other regions and timescales, the impacts of services, the limited potential for recycling, lack of technological innovations, and cost shifting by polluting industries to society and nature.29 This strong coupling of growth and emissions is also the reason why the only historical periods when total CO2 emissions actually did go down were periods of economic decline: after the collapse of the Soviet economy in the early 1990s, during the global economic crisis from 2008 to 2010,30 and during the coronavirus pandemic.31 For some, the social fallout from these crises are evidence that degrowth is never desirable. However, degrowth advocates point out that, within a growth-oriented economy, economic crises end up leading to more environmental impacts eventually, as environmental regulations are loosened and countries accelerate production after the crisis.32 For degrowth advocates, economic crises are not degrowth; rather, they show that an economy dependent on growth is unable to satisfy both social and environmental needs. The point, instead, is to move towards an economy in which well-being can increase while environmental damage rapidly declines, thereby decoupling prosperity from ecological impact and thus also from economic growth. Significance for degrowth: Avoiding apolitical ecology While these ecological approaches shape today’s degrowth discussion, classical conservation movements motivated by romantic unease about the destruction of ‘untouched’ nature, or Malthusian critiques that problematize population growth, are less important for degrowth. On the contrary, many degrowth authors criticize arguments that primarily focus on population growth as structurally racist. Demographic arguments are implicitly mostly directed towards the Global South, where the population is currently growing. But it is precisely the rich countries – where population is currently stagnating or declining – that are historically and today mainly responsible for the ecological crisis. Ecologically, lifestyle or per-capita consumption is much more important than the abstract number of living people.33 Criticism of population growth under the given circumstances is therefore usually (sometimes only implicitly) a criticism of the high reproduction rates of people in the Global South, although these live far more appropriately from a purely ecological point of view, and it thus diverts attention from what is much more important: affluence and the systemic drivers of growth.34 Arguments based on population growth typically view humanity as having an aggregate, monolithic impact, which is a function of the number of people in the world. However, humans can develop societies that are carbon neutral or even carbon negative – storing carbon through building up soil, regenerating ecosystems, and building a world of abundance that does not transgress planetary boundaries and is based on ecological knowledge. Ecological arguments based solely on demographics and population growth deny this reality that we can, and should, create different social systems – they are thus limited to an apolitical ecology. The ecological critique of growth impressively reveals a fundamental dilemma that is now increasingly becoming part of everyday consciousness and that also plays a role in almost all other growth critiques: if the ecological foundations of human life are not to be further destroyed, the material flows of the economy must be slowed down and reduced very quickly in the coming years – which is very unlikely and maybe not possible alongside simultaneous economic growth. In addition to efficiency and consistency, sufficiency – a reduction in the consumption of raw materials, energy, and land which nevertheless offers a basis for well-being – as a way to a sustainable society is therefore of primary importance.35 To further stress this point: the ecological argument is not only one of limits and renunciation. Prioritizing socio-ecological interactions within our political systems offers the potential for building a world of sufficiency – enough for all – that satisfies both material needs of all humans globally and planetary boundaries – well-being within limits.36 3.2. Socio-economic critique The OECD recently announced that ‘for much of the twentieth century, the implicit assumption that economic growth was synonymous with progress prevailed: the assumption that a growing Gross Domestic Product (GDP) meant that life had to get better’.37 The socio-economic growth critique calls this assumption into question: further economic growth in the Global North does not (any longer) improve the quality of life. Growth is therefore not desirable as such. Rather, quality of life depends on other factors, which do not need growth: equality, democratic participation, leisure time, revaluation of care work, or the overcoming of irrational, growth-oriented consumption habits such as positional consumption.38 Based on a large number of empirical studies, this form of growth critique shows that the social and environmental costs of growth above a certain individual or societal income level are higher than its benefits. The socio-economic growth critique thus provides the basis for a degrowth perspective that sees the end of economic growth not as a threat, but as an opportunity for new forms of well-being and a good life for all. Early economic critiques of growth and consumption Socio-economic growth criticism became prominent in the middle of the twentieth century, with some earlier precursors. Since the 1970s, it has played a central role in heterodox (i.e., non-neoclassical) economics, especially in welfare economics and feminist economics but also in the interdisciplinary field of ‘happiness research’ and in social history. Being anchored mainly in academia with a more narrow argumentative thrust, it is less radical (in the sense of ‘going to the roots’) and critical of the existing systems than other lines of argumentation critical of growth, but it is also relatively accessible. Some of the theses of the socio-economic growth critique go back to the British economist John Stuart Mill, who argued as early as 1884 that an end to economic growth, which he predicted would occur in the long term, did not mean the end of human progress. On the contrary, according to Mill: ‘There would be as much scope as ever for all kinds of mental culture, and moral and social progress; as much room for improving the Art of Living, and much more likelihood of its being improved, when minds ceased to be engrossed by the art of getting on.’39 This line of argument was also common among more radical thinkers like William Morris, who, influenced by Karl Marx, argued that an economy less oriented towards accumulation and material growth could nevertheless lead to fulfilling lives – as he sought to illustrate in his utopian novel News from Nowhere. Writing in 1896, he observed: ‘But think, I beseech you, of the product of England, the workshop of the world, and will you not be bewildered, as I am, at the thought of the mass of things which no sane man could desire, but which our useless toil makes – and sells?’40 In contrast to ‘useless toil’, Morris proposed a society that was based on useful, pleasurable work (rather than the total abolition of work), in great part because creative work is essential for human beings to thrive.41 Another early critic of growth and consumption was Thorstein Veblen, an eclectic and ground-breaking economist who is considered one of the forerunners of institutional economics, a field of heterodox economics that greatly influenced ecological economics. In his book The Theory of the Leisure Class, Veblen coined the term ‘conspicuous consumption’ to describe how the rich purchase goods or services mainly for the specific purpose of displaying their wealth and social status through luxury goods.42 In Veblen’s analysis, a dynamic emerges when poor people mimic this behaviour, and the rich respond by consuming ever newer and more luxurious ‘positional goods’, leading to a society that is wasting time and resources in irrational ways. Institutional economists took Veblen’s argument a step further to highlight how novel social norms – such as the institution of positional consumption – may eventually lead to cascading and self-reinforcing effects.43 Several decades later, this field greatly informed the work of heterodox economists such as Elinor Ostrom, who drew on institutional economics to show how managing common resources requires looking beyond market transactions or private property (see section 4.1).44 Another, more famous forerunner of the socio-economic critique was John Maynard Keynes, one of the most influential economists of the twentieth century. In his famous essay ‘Economic Possibilities for Our Grandchildren’, Keynes formulated a series of long-term predictions about a good life beyond growth, drudgery, and endless accumulation. In discussing whether human needs are really insatiable, as is conventionally claimed, and thus require infinite growth, Keynes distinguished two classes of human needs: those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be, and those which are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows.45 Based on this distinction, he argues that although the need for what would later be dubbed ‘positional consumption’ may be insatiable, ‘absolute’ needs are finite: ‘a point could be reached soon, much sooner perhaps than we are all aware, when these needs are satisfied in the sense that we prefer to devote our further energies to non-economic purposes.’46 Based on this analysis, Keynes concludes that while economic production and living standards in industrialized countries would continue to rise well into the twenty-first century, by 2030 the grandchildren of his generation would have reached a state of abundance in which, instead of continuing to pursue profane activities such as saving, accumulating, or wage labour, they would devote themselves to higher goods such as leisure or the arts. Even in these very early analyses the idea emerged that continuous growth is not the end of history but, on the contrary, that at a certain point in the future, growth may even stand in the way of human progress. From then on, the increase in material prosperity will be replaced by the search for a good life, pleasure, meaning, and ‘time prosperity’ (drastically reduced working hours for all) or, as in the case of William Morris, more pleasurable and useful work. Consumer criticism and positional goods At the height of the ‘golden age’ of high growth rates in the post-war decades, a critique of prosperity and consumption developed which drew in great part from institutional economics and looked at the social, psychological, and ecological costs of prosperity. The increasing criticism of consumer society – expressed politically both by the left and by conservatives – came in the form of much-discussed popular science books such as Kenneth Galbraith’s The Affluent Society (1958), David Riesman’s Abundance for What? (1964), E. J. Mishan’s The Costs of Economic Growth (1967), or Fred Hirsch’s Social Limits to Growth (1977). These criticisms can be used politically in different ways. In their conservative, or classist, variant, their arguments are directed against the democratization of consumer practices previously reserved only for the social elite – mass tourism, for example, is a problem because no one may now enjoy the secluded beach as before. In a more critical variant, however, which can still be made productive today, the critique is directed against a series of social logics of increase, acceleration, and distinction that lead to greater consumption instead of a better quality of life. Building on earlier work, Fred Hirsch formalized the concept of ‘positional goods’ as goods that derive their value above all from their scarcity and, therefore, the more people consume them, the less their value. As an example of this ‘abundance paradox’ he cites tourism, or the desire for a home in the suburbs. In society as a whole, the competition mechanism leads to a wasteful competition for positions, in which everyone tries to gain a higher place in the social hierarchy even if this can only be accomplished at the expense of others. It is a zero-sum game: ‘What winners win, losers lose.’47 Based on these and similar concepts, modern happiness research analyses the functioning of the ‘treadmills of happiness’ caused by positional competition and social logics of increase and acceleration – and the possibilities of getting out of this hamster wheel.48 The paradox of happiness and income While earlier contributions to a socio-economic growth critique argued mainly theoretically, a broad field of empirically oriented research has developed since the mid-1970s. In 1974, the US economist Richard Easterlin provocatively asked: ‘Does economic growth improve the human lot?’ His statistical analysis of the relationship between GDP and subjective feelings of happiness introduced the much-discussed ‘Easterlin paradox’, or ‘happiness-income paradox’, in economics debates. In essence, it states that, although to some extent quality of life is directly related to income (both within a country and between countries), quality of life does not increase in the longer term if a country’s income exceeds a certain level. Four decades later, extensive studies have largely confirmed this thesis.49 As a product of the socio-economic growth critique and the ‘happinessincome paradox’, a variety of alternative methods of measuring well-being have been developed since the 1970s. These were decisively inspired by feminist criticism of GDP (see section 3.5). These methods include those that complement the national accounts (roughly speaking, GDP) by including non-market factors such as unpaid labour, environmental degradation, and well-being (see, for example, the Genuine Progress Indicator or the Index of Sustainable Economic Welfare); those that measure ‘social indicators’ based on social values (such as housing conditions, education, environment, and health, for example the Better Life Index of the OECD); and those that directly survey subjective well-being through questionnaires.50 Studies that compare different countries with each other and those that analyse changes in the quality of life within a country over time show that the relationship between GDP and quality of life is only stable up to a certain level of prosperity. In most industrialized countries, this was the case until the 1970s or 1980s, after which the relationship falls dramatically apart: even if the economy continued to grow, prosperity has stagnated or even started to decline over recent decades.51 How can these empirical results underlying the socio-economic critique be interpreted? Five explanations seem particularly central. On a material level, one reason is, first, that more is not always better. In economics, this is discussed as the ‘diminishing marginal utility’ of goods (or income), which means that any additional quantity of goods generates less additional satisfaction. An extra $100 in additional income will hardly make a person with an income of $5,000 any happier. However, for someone with an income of $600, or even $30, an additional $100 makes a huge difference. Second, the ‘relative income effect’ means that, even if more income does not make a country’s population happier, it is still worth it for individuals to be richer than other people in their vicinity. Inter-country comparisons show that absolute gains in life satisfaction through increased income are many times lower in richer economies than in poorer ones. To a large extent, they are offset or even surpassed by senseless status competition throughout society and rising social and ecological costs. Therefore, according to the British economist, and author of the book Prosperity without Growth, Tim Jackson, a key message of this research is that ‘there is a strong case for the developed nations to make room for growth in poorer countries’ because, in the latter, ‘growth really does make a difference’.52 Third, the disparity between rising GDP and well-being is simply due to the fact that GDP is a poor measure of well-being, since it neglects non-market labour, does not measure the social and environmental costs of economic growth, neglects inequality, and so on (see chapter 2). Fourth, in the 1970s and 1980s, the ‘golden age’ of Fordism or ‘democratic capitalism’ in most regions in the Global North ended. It was replaced by neoliberal policies such as financialization, deregulation, privatization, and social cuts, which led to a massive increase in social inequality and increasing precarity and the flexibilization of working and living conditions. The prominent idea that a rising tide lifts all boats has been disproved. There has been a marked shift from what Ulrich Beck called ‘elevator societies’ – those with a lot of upward social mobility – towards societies characterized by social decline, exhaustion, and anxiety, in which a small elite is able to capture an increasingly larger share of the output.53 Fifth, and finally, the general trend towards declining growth rates in the industrialized countries – secular stagnation – without redistributive measures leads to an increase in class inequality and a stagnation or decline in the quality of life of the majority of the population (see Figure 3.1). In the long run, without growth, capitalism changes into a neo-feudal market economy, capital accumulation slackens, overcapacities increase, and inequalities explode.54 For these reasons – according to the socio-economic growth critique – politics cannot realistically rely on further economic growth in the rich countries in order to achieve gains in the quality of life. Thus, other sources of well-being, which do not depend on economic growth, must move to the centre of the discussion. This line of argumentation was also recently highlighted by the European Environment Agency – who in a 2021 report argued: ‘The broader “post-growth” concept seems highly relevant for Europe and other developed regions as they face increasing uncertainties about future GDP growth’ (see Figure 3.1). 55 Figure 3.1. Annual growth of GDP (2010 USD), rolling average for previous ten years. Source: European Environment Agency, Reflecting on Green Growth: Creating a Resilient Economy within Environmental Limits (Copenhagen: European Environment Agency, 2021), 24; created using World Bank data. Significance for degrowth: In an economy based on growth, any recession is a crisis In the more contemporary degrowth debate, this research is interpreted as evidence that prosperity is possible without growth. However – and this already indicates one of the central requirements of a degrowth vision – the fact that growth does not (any longer) bring additional prosperity does not necessarily mean that within capitalism growth is meaningless for the wellbeing of people. For in capitalist growth societies, the economic, social, institutional, and mental infrastructures are designed based on, and are geared towards, growth and accumulation – these institutions of modern society are dynamically stabilized through expansion and only function in the context of growth. A lack of growth is, if these structures are not changed, first of all a crisis. The recession during the COVID-19 pandemic has been a crisis for most people, in great part because declines in growth were not (or not adequately) paired with policies that guarantee well-being and security. Empirical studies show that life satisfaction falls drastically during economic crises, because while expectations tend to go up quickly during boom cycles – we all want to keep up with the Joneses – they are not adjusted downwards in times of crisis. This shows that well-being and happiness are both socially determined and economically contingent. Social participation in consumer societies also depends to a large extent – also for the lower classes – on expressing identity, affiliation, lifestyle, and status through consumer goods and the symbolic language embedded in them. And modern welfare states basically function as growth states – across the entire political spectrum, the promise of welfare is based on growth raising the standard of living of poorer sections of the population and at the same time providing the financial means for welfare programmes via taxes.56 Thus it is necessary, beyond individual appeals for renunciation and subjective discussions about happiness, to overcome the social foundations of growth societies based on status competition and a narrow focus on gainful employment – and to replace them with a different social organization. That this is possible is shown by studies that have demonstrated that quality of life does not depend on growth but instead on factors such as equality, prosperity, trust, social security, political participation, and the appreciation of care work – none of which require GDP growth.57 These studies have shown that, above a certain income level which industrialized countries have long since reached, gains in equality are much more important for a multitude of factors central to the quality of life (such as life expectancy, health, social mobility, trust, education, and so on) than rising incomes, for all in society, even the better-off.58 This is one of the reasons for the importance of equality in the discussion on degrowth. These ideas have recently been developed further by philosopher Kate Soper, who calls for an ‘alternative hedonism’, which shares many of the core intuitions of the degrowth perspective. Alternative hedonism, Soper argues, is premised on the idea that even if the consumerist lifestyle were indefinitely sustainable it would not enhance human happiness and well-being beyond a certain point already reached by many. Its advocates believe that new forms of desire – rather than fears of ecological disaster – are more likely to encourage sustainable modes of consuming.59 So, beyond all the ecological justifications for degrowth, there are many other reasons, key among them declining actual growth rates and the need to adjust to these, as well as the human desire to improve well-being further, beyond the confines of consumerist lifestyles and economic growth. 3.3. Cultural critique Suburbia, shopping, malls, sweatshops, branding, mass consumption: critique of consumer culture is by now a cliché and easily recognizable. While it is often shallow, there is quite a lot more to this line of critique than may appear at first. When done right, cultural critique can get at some of the deepest social issues and can be an accessible in-road for many people to develop a broader critique of the economy. Indeed, aside from ecological criticism, cultural criticism was the most influential strand of criticism of the first wave of growth-critical debates in the 1970s and 1980s. Here, we summarize various forms of this critique, which deal with how people are formed as subjects by growth societies. The question is to what extent an internalized growth logic is a major driver of growth, and in what way economic growth comes up against ‘subjective limits’ that lie within people themselves. Cultural critique is concerned with making visible the mechanisms and consequences of these internalized logics, which are often unconsciously acted out, and showing them to be contingent, or in other words, socio-culturally determined and subject to change. A central concept of cultural criticism is ‘alienation’. Cultural critique also often deals with anthropological questions – that is, questions about what it means to be a human being and what kind of image of humanity we create when we talk about the economy. Ecological humanism and the critique of modern society A key source of thought for the degrowth movement is a field of progressive authors that can be put under the broad category of ‘ecological humanism’ (see also sections 3.6 and 4.1). More well-known culprits in this strain of thought include thinkers such as Henry David Thoreau, Leo Tolstoy, Mahatma Gandhi, and, more contemporarily, Rachel Carson, E. F. Schumacher, and Jane Jacobs. What unites these thinkers is their ecological humanism – that is, combining an embrace of the diversity, uniqueness, and connectedness of the human experience, with a critique of modernity, and an advocacy of ecological awareness. This includes thinkers who are often, but not always, critical of capitalism.60 Importantly, much of this thought pushes back against the idea of the individual as an isolated being. Rather, rooted in an – often highly poetic – assessment of the human experience, these thinkers tend to stress the interdependence of human beings and ecosystems. Yet, this is often balanced, as in the work of Tolstoy, Erich Fromm, Mikhail Bakunin, and Murray Bookchin, with a recognition of the importance of freedom and autonomy and a rejection of authority and social hierarchies. A second facet is the critique of modernity and modern life. Thinkers such as E. F. Schumacher, Jacobs, Ivan Illich, Lewis Mumford, and Kirkpatrick Sale, as well as Aldo Leopold, Wendell Berry, Thoreau, and Gandhi, stressed simplicity, political decentralization, and economic as well as technological organization at a human scale. For these thinkers, modern civilization also engendered a socio-economic system that was alienating and detrimental to human – both individual and collective – flourishing. A third critique made by the ecological humanists is that an ecological understanding must be integrated within progressive analysis. Many of these thinkers, such as Rachel Carson and Murray Bookchin, were far ahead of their Western contemporaries in advancing an ecological critique of society itself. Running through their approaches was an understanding of the relationships between society and nature, as well as a deep understanding of ecological complexity and how modern society systematically degrades those relationships. Degrowth can be seen as taking up this diverse tradition, by stressing notions of interdependence and selfdetermination, as well as by advocating for an ecological politics, which does not see progress as necessitating domination over or separation from nature. The ecological humanist approach can run into trouble, however, when it is uncritically romantic and anti-modern, or when it lacks a critique of capital and colonial relations. For example, within the tradition of American ecological thinkers, there often was not a sufficient engagement with Indigenous epistemologies, whose own environments were relegated to the status of supposedly untouched wilderness. Indeed, much of cultural criticism emerged as a romantic discomfort with the ‘cold’ and ‘rationalist’ industrial world, informed by the eighteenth-century work of Jean-Jacques Rousseau, who upheld the ideal of the ‘noble savage’ and the flight to a pastoral life as a way of escaping modern society. There is also a risk of holding on to problematic justifications for gender inequality and paternalistic ideals of motherhood as a form of sacrifice. This is not to say that ecological humanism in general falls into romanticism – the work of thinkers such as Bakunin, Bookchin, Fromm, and Jacobs shows otherwise. Rather, it is to emphasize how an ecological critique of modern society must go deeper to appreciate the capitalist, patriarchal, and colonial roots of alienation and ecological degradation. ‘Alienation’ as a key term In 1844, the young Karl Marx formulated theses on the ‘alienation’ of people through capitalist work and class society. In a capitalist society, people do not choose to go to work; they are forced to do so because – ‘freed’ from the means for subsistence – one needs to have an income to survive. And, thus, people become estranged from their humanity. As Marx described, work is alienating in great part because workers neither command the work process nor the fruits of their labour – their function is the same as a cog in a machine: to execute a particular part of the assembly line. For most, work is neither creative nor fulfilling; people are deprived of their ability to determine their own actions and destiny or their relations to other people and to the products of their own labour. Workers are thus turned into instruments; they function as a thing, not as a person.61 Building on these arguments, thinkers such as Ivan Illich, the French anti-utilitarian group MAUSS (Mouvement anti-utilitariste dans les sciences sociales), the Situationist International, and authors such as Herbert Marcuse (in OneDimensional Man) and Erich Fromm (in To Have or to Be) have argued that capitalist society produces not only unequal but also alienated relations – both to oneself and to the world. The critique of alienation is very present in degrowth debates and therefore distinguishes it from other leftist critiques. However, it also often provokes controversy over the legitimacy of this form of criticism, because it is often seen as an anti-modern or individualist approach, as we discuss in the conclusion of this section. Today, we are further alienated in our workplace, as many of the jobs we have do not feel useful or productive at all. This was most recently argued by David Graeber, who introduced the concept of ‘bullshit jobs’ to describe how, in the regime of modern capitalism (which is supposedly efficient and competitive) much of our work is meaningless, unnecessary, or even harmful.62 From a degrowth perspective, all these ‘bullshit jobs’ – from lobbyists to underemployed office workers to financial service providers or telemarketers – are not only profoundly alienating, but also superfluous. A society not structured around growth would not require people to work useless jobs that they hate. Let us take a moment to expand briefly on the critique of alienation. More broadly, alienation is a ‘silencing’ of self and world relationships, which in extreme cases can be manifested in depression or burnout.63 It can occur in and through work, consumption, or in relation to one’s own body, such as through an eating disorder. The alienation of the worker from her own activity in industrial society is a central object of the criticism of industrialization (see section 3.6). However, critical theory has extended the concept of alienation to the field of consumption and to industrially prefabricated consumer and cultural experiences.64 Typical for societies that are subject to a logic of growth is the contradiction between the exponentially increasing variety of options (for example, the possibility to purchase more and more consumer goods and services, to extend the range of one’s own social interactions to the entire globe by smartphone) and the real – above all temporally but also physically limited – possibility of using them. As a result, some consumer goods are not bought primarily for use; instead, the event of ‘shopping’ and the promise that such goods carry with them come to the fore – a new or better pair of badminton rackets may promise afternoons of play, though we soon realize there is hardly any time for using them in everyday life.65 This kind of absurd, compensatory consumer behaviour is at the centre of current growth-critical consumer critique – which thus differs from the paternalistic bourgeois post-war critique of consumerism that had complained in a classicist manner about the increase of the consumption of working people (see section 3.2). Another critique of alienation important to mention here is that of the Situationist International, whose critique of the ‘society of the spectacle’ and of consumer society has also influenced degrowth theory. For Situationists like Guy Debord and Raoul Vaneigem writing in the 1950s and onwards, Marx’s theory of alienation was basically correct but had to be extended to better fit the changing realities of contemporary society. For these thinkers, the alienation of the workplace had been extended to everyday life. Capitalist accumulation and exploitation was a feature of urban space – through ever-present advertising, vast shopping districts, and the redesign of cities to stimulate consumption – and of popular media, the radio, magazines, and so on. The Situationists noted how, increasingly, our relationships with one another are mediated through objects and media (and remember that their argument preceded, by a half-century, the arrival of social media, targeted advertising, and platform capitalism). Individual expression takes the form of the consumption of commodities, rather than direct, authentic communication. Thus, the Situationists argued that, beyond the workplace, culture itself is a key site of control, pulling us into spectacular accumulation and competition with one another and ourselves.66 As we explain in the next sub-section, the Situationists also proposed practical ways of cutting through the ‘spectacle’ of society, methods that would come to influence the degrowth movement as well. Adbusting and culture jamming ‘Be realistic, demand the impossible.’ This was one of the many playful slogans spray-painted in the streets of Paris in 1968, leading up to and during the period of massive social unrest. The slogan was an early example of what later came to be part of a bigger movement in which people hacked and played with their surroundings and with the media in order to convey counter-cultural messages – practices collectively called ‘adbusting’ or ‘culture jamming’. Indeed, these strategies were very influential in shaping the degrowth movement in the early 2000s. Adbusting describes the practice of intervening in, or playing with, advertisements in public space in order to change their meaning in an often critical or humorous way. The Situationists were early adopters of this approach, as one of the key methods they advocated for breaking through the consumption-oriented society of the spectacle was that of ‘détournement’ (meaning ‘rerouting’ or ‘hijacking’), a strategy whereby one would take hegemonic ideas from mainstream culture and turn them against themselves. This would allow activists to sneak counter-cultural ideas into the mainstream through ‘culture jamming’, as it was practised by the punk movement, militant feminists such as the Guerrilla Girls, and, later and more famously, the magazine Adbusters, which played an important role in kickstarting the Occupy Wall Street protests.67 To highlight the importance of this strategic perspective, the story of the degrowth movement’s beginnings is worth briefly recounting here. As mentioned in the introduction, the term ‘degrowth’ was launched in 2002 by the editors of Casseurs de pub (the French version of Adbusters), who conceived of the phrase décroissance durable as a sly play on développement durable – which was the concept of the day as promoted by the World Trade Organization and the leaders of early industrialized nations – and as a reference to Georgescu-Roegen’s early use of the term décroissance (see section 3.1). Pairing ‘sustainability’ and ‘degrowth’ in this way was not only meant to highlight the need for an equitable downscaling, but also a way to turn a mainstream hegemonic concept against itself – continuing the tradition of the Situationists and antiestablishment culture jammers. Thus, degrowth has its roots in countercultural movements and was, from its very inception, seen as a playful word, meant to destabilize mainstream cultural hegemony. 68 Degrowth has since continued to be a central concept behind the adbusting movement, and climate justice movements aligned with degrowth often use similar spectacular and playful methods to break through the spectacle of mass media.69 People as complex relationships Beyond strategies for cultural intervention, degrowth has adopted an approach to culture that seeks to counter deep-seated Western assumptions. As analysed in chapter 2, to want more and more is not ‘human nature’. On the contrary, unlimited consumer desires are functionally necessary for an ever-increasing demand and thus for the sustained growth of markets, which allows capitalist crises of overaccumulation to be deferred. Today’s consumer societies of the Global North did not come about because humans are insatiable but were in fact deliberately constructed at the end of the post-war period. Neoclassical economic theory rests on the assumption of a consumer who maximizes self-interest with every purchasing decision. In this, it is supported by popular and supposedly self-evident claims, like the idea that human beings are essentially selfish, greedy, and insatiable, that they, like other animals, are trying to prove themselves in a supposedly permanent competition of ‘survival of the fittest’. This is crystallized in the concept of Homo economicus at the centre of neoclassical economic theory: that the human being rationally maximizes their own utility. Far from being scientific knowledge, this is an ideological construct.70 This ideology, nevertheless, creates realities, because people become subjects through social systems structured in large part by the directives of economics. People who are socialized in this way, in consumer society, can be characterized as ‘growth subjects’. In analysing ‘growth subjects’, which are often conceptualized according to the model of the bourgeois white man, three characteristics are particularly noteworthy: (1) having the status of an apparently completely independent individual; (2) an orientation towards maximizing one’s own ‘world reach’, or making ever larger parts of the world available to oneself, through for example, travel, consumption, media usage, and so on; and (3) striving for personal assertiveness in order to achieve these goals under competitive conditions.71 In contrast to this one-sided view of man, and strongly inspired by feminist criticisms of Homo economicus (see section 3.5), degrowth takes a view of the human being as part of a complex system of relationships with manifold interests, among which self-interest and the pursuit of material prosperity are only one of many facets.72 The French-speaking network of anti-utilitarian scholars MAUSS, which is closely linked to degrowth, argues for the right to exist in all the manifold states a human subject may exist in, including cooperativism and interdependency with others.73 The critique of Homo economicus is thus twofold: on the one hand, it is a critique of the limited understanding of the human being, as found in economics and popular science, as a rational utility maximizer; on the other hand, it is a critique of the hegemony of specific ‘growth subjects’ that accompany, are generated by, and structure growth societies. Logics of intensification, acceleration, and alienation Anti-utilitarians rightly criticize the way that, in capitalist society, diverse human goals are reduced to the satisfaction of a constricted economic subject. The sociologist Hartmut Rosa extends this critique to argue that subjects are also embedded in, and internalize, a ‘logic of intensification’ which expresses itself through acceleration and scarcity of time. A key condition of the modern subject is thus that the world of things, the social world, and the subject itself are in permanent change and moving ever faster, forcing every person to permanently intensify their relations and their world reach in order not to be left behind. Three dynamics drive this logic. First, there is technological acceleration, driven by the ‘economic motor’ of the capitalist mode of production. Second, there is the concomitant acceleration of social change by the ‘social-structural motor’ of functional differentiation – the emergence of ever more numerous social subsystems with specific logics, demands, and challenges of their own (such as politics, economy, law, science, and so on), which make it possible to deal with complexity only by increasing in complexity, expertise, and differentiation in a competitive dynamic. Third, there is the pace of life itself, driven by the ‘cultural motor’ of ‘the promise of acceleration’. This promise involves the continuous enlargement of one’s world reach, and the increase of the variety of options, in one’s own life, without which one’s participation in society declines and becomes precarious. Standing still becomes a setback, like going up a downward-moving staircase. If we do not participate in these competitive dynamics of acceleration, we fall behind. A worker at a food packaging warehouse wears herself thin through working various side-jobs so that she can afford to travel. An office worker uses every minute off work to post Instagram stories and grow his follower count. A climate justice activist rushes from one protest camp to another, and in between writes a few articles about degrowth. We are all, in different ways, subject to these accelerating dictates of the growth society, which pertain in every sphere of life, including romantic relationships, work, and leisure time. According to Rosa, these constraints work even when the individual themself does not wish for acceleration at all: in a growth society, intensification is necessary to maintain the status quo. The logic of intensification can therefore hardly be overcome by people individually changing their lives. Structural and collective transformations are needed (as will be discussed in chapters 4 and 5).74 Subjective limits to growth Aside from these broader, systemic critiques, some authors also focus on the ‘subjective’ limits to growth, which can show themselves either in exhaustion, general dissatisfaction, feelings of lack, or resistance to one’s own work or life situatio n. According to Barbara Muraca, the pressures from institutions of growth, work, and consumption push us to our limits.75 Already in the 1970s, Ivan Illich argued that a society geared only to increasing productivity and always creating new needs will necessarily fall victim to lack, deficit, and want, since these newly created needs can never be fully satisfied.76 The sociologist Dennis Eversberg speaks of the ‘individual limits to growth’. These manifest less in the limits of human physiology (apart from the fact that death inevitably occurs after certain periods of food or sleep deprivation) than in the resistance that people mount against the imposition of intensifying their productivity in the everaccelerating world of work and consumption.77 In this way, different ‘growth regimes’ produce different kinds of limits, and, correspondingly, forms of resistance. For example, in the Fordist regime, the monotony and uniformity of work and consumption became a limit to both the willingness of people to continue to work and consume within this regime and to the possibilities of expansion. Yet the factory worker using every bathroom break allowed in the eight-hour workday to go outside for a smoke may also use this time to talk with other workers and eventually to form a union. Or, in the regime of neoliberal or flexible capitalism, a Facebook employee, who aspires to advance her career, will try to be more and more efficient, and become a ‘creative’ and forward-thinking worker, but will, sooner or later, face burnout. She may either abandon her career or use the resources she has built to start a cooperatively owned social media platform. Another contemporary example would be the elderly caregiver, who is required to keep a very strict schedule and note down every activity during her working hours – but she may lie about her schedule and instead have a tea or chat with the person she is caring for. In this way, even as economic pressures are forced on us in our daily lives and limit us, we find ways to use those limits to our advantage. Thus, within the limits upon individuals within the growth regime, there are also possibilities that can be taken advantage of. Expanding on this, in chapter 6, we discuss how Ernst Bloch’s thesis of utopian surplus opens up opportunities for collective resistance to the effects of the growth regime on our psyches. Significance for degrowth: Interdependence as the human condition Cultural criticism has been integrated in very different ways in degrowth discussions in various countries. In the French-speaking discourse on décroissance, alienation plays a central role, as it is influenced by the Situationists and the work of André Gorz, for example (see section 3.6). In addition, the theses of the MAUSS group have been widely received there. In German Postwachstum (‘post-growth’) discourse, the theses of Hartmut Rosa on acceleration and expansion are extremely prominent, but these have so far hardly been taken up in the international debate. In the Englishspeaking discourse, where degrowth has made bigger inroads only more recently, degrowth has a close affinity with authors such as E. F. Schumacher and Wendell Berry, who levelled a critique of contemporary society and sought to offer more ecological, contemplative alternatives. We argue that cultural criticism is particularly fruitful and a necessary ingredient to an emancipatory post-capitalist politics if it builds on these various international roots and does not appear as a one-sided bourgeois critique of ‘the modern way of life’ that advocates manual labour, uncritically promotes a ‘return to community’, engages with common tropes of personal self-optimization and individuality in the face of mass culture, or fails to engage in a critique of social structures and political systems of power altogether. Certain kinds of cultural criticism are often seen as reactionary and as being against modernity, rather than being understood as seeking to move beyond modernity. Criticism of consumerism, in particular, often faces the charge that it focuses on individual action and is not sufficiently engaged with a critique of capitalist production, which drives and creates consumption in the first place (see section 3.4 immediately below). While it is true that, more broadly, criticism of consumption often appears depoliticized, individualized, and simply reactionary, we have sought to highlight critiques that offer much more. Indeed, the cultural critique of growth described here largely points to the role culture plays in driving and further intensifying the exploitation of individuals, leading to new forms of accumulation of capital. In other words, this critique highlights the fact that consumption and culture themselves should be seen as a site of capitalist domination that must be addressed collectively – in addition to and beyond addressing exploitation in the workplace or ecological degradation alone. And, because culture is so intimately tied to our lives, the cultural critique is also an entry point for many to start engaging with anti-establishment ideas – the challenge is to transform this into a cogent critique of capitalist alienation, beyond individual dissatisfaction or self-improvement. For degrowth, then, cultural critique raises the question of what other forms of subjectivation, those that overcome growth and expansion, might look like: such as, for instance, the ‘relational self ‘, a subject that seeks to undo hierarchies and sees itself not as autonomous but as fundamentally connected with other living beings. One way of approaching this is to foreground a more precise notion of ‘conviviality’, forms of social organization that enable mutual dependencies, the negotiation of interpersonal relationships, and good coexistence. Alongside this, a critique of alienation opens avenues to discuss the social conditions for nonalienated relationships to the world, not by focusing on greater prosperity, individual autonomy, or expanding our world reach (more income, mobility, and so on) but by focusing on the quality of a few, stable relational axes to the world, by developing non-growth forms of flourishing, and by creating the conditions for non-alienated forms of work through democratic institutions to collectively govern our lives, our economy, and our relations with nature.78 3.4. Critique of capitalism ‘Accumulate, accumulate! That is Moses and the prophets!’79 This quotation from Marx’s Capital concisely summarizes the thesis that capitalism – through the competitive compulsion to accumulate – is fundamentally organized around competitive expansion, growth, and intensification and can only function in this way. In classical economics, accumulation (from the Latin accumulare, ‘to heap up’), describes the continuous process of adding value to capital. Value is created through the metabolic interaction with nature in the form of work, and then exploited by the property-owning classes who can extract surplus value by selling the finished commodity. In a competitive market system, this surplus value must largely be reinvested as capital (machinery, resources, labour), thus leading to expansion and the continued expanded reproduction of capital at ever-higher levels. As we explain further below, this process of accumulation materializes as growth, but also leads to systemic crises and ‘contradictions’ (ecological, financial, social, political, etc.).80 As feminist and Global South critics emphasize, beyond the exploitation in the workplace (the ‘hidden abode of production’, to use Marx’s famous term), capitalism is also fundamentally dependent on appropriation and the continuous colonization of a non-capitalist outside. This process of appropriating the non-capitalist ‘outside’, which following Rosa Luxemburg has been theorized as Landnahme (land grabbing), can be understood geographically (as colonialism), socially (as reproduction work, spheres of life not yet commodified), and in relation to nature.81 The crises resulting from this double dynamic of exploitation and appropriation inherent to the process of economic growth – so goes the core argument of the critique of capitalism – cannot be understood nor overcome without undoing the systemic logic and associated social relations of domination and exploitation of capitalist accumulation.82 The critique of capitalism is as old as capitalism itself. Even if, in parts of the degrowth discussion, the critique of capitalism is ignored, we consider it essential to understanding the growth society and to the possibility of changing it. The critique of growth, we argue, must also include a critique of capitalist accumulation. In the words of Elmar Altvater (who himself modified Max Horkheimer’s statement about the connection between capitalism and fascism): ‘They who will not speak of the accumulation of capital shall remain silent about growth.’83 From a degrowth perspective, growth can be analysed as a necessary consequence, but also as a condition, of capitalist accumulation. In addition to the critique of consumption and the external limits of growth, production and the mode of production must also be central to a critique of growth. This includes capitalism’s tendency to enter into crises – and its continuous overcoming of them through transformations of the mode of production and further expansion to new frontiers – as well as class conflicts and the social institutions (property, corporations, banks, nation-states, the military, monopolies) involved in accumulation and growth processes. Since the limits of growth are also the limits of capitalism (which dynamically stabilizes itself through growth), it is not just economic growth that is under consideration but the capitalist system as such. For, without growth, capitalism threatens to further deteriorate into a refeudalized, miserable, unequal, and authoritarian system marked by strengthened borders and conflicts over resources. From the point of view of this criticism, degrowth necessarily also means post-capitalism and is therefore closely aligned with anti-capitalist movements and eco-socialism in particular. 84 Continuous accumulation process According to Marx, capitalism is a social structure and economic system which, first, is driven by capital being invested with the aim of earning more money, and in which, second, this accumulation dynamic – based on private ownership of the means of production, wage labour, and competitive markets – has a decisive influence on society. This is often explained using the formula M–C–M’ (or: money–commodities– more money). Capitalists invest capital in commodities such as machinery, raw materials, and energy, but also in labour. The ‘double character’ of wage labour in captialism creates a product that not only has a concrete use value, but also an abstract exchange value. Based on the exchange value, the commodity is worth more than the capital invested and is sold again on markets. This means that the amount of money (M) initially used is converted into a larger amount of money (M’) through a metabolic exchange with nature and commodified work (that is, wage labour) that produces commodities (C).85 If this were the whole story, capitalism would simply involve surplus being consumed privately or spent socially – whether through building palaces or churches or holding large feasts or parades. However, because of market competition, the productive forces moving forward through technological improvements, and the competitive need to accumulate capital, a large part of the profits must be reinvested into acquiring more capital. This creates a continuous accumulation process.86 The fact that the generated surplus value is constantly reinvested in the purchase of better and more modern machines, more or cheaper materials, or in the employment of more or more productive workers is not the result of the individual greed of the capitalist. Due to the competition for market shares and advances in productivity, investing is not an arbitrary decision, but a constraint that restricts all actions of owners of capital and dominates the entire economic system. The tremendous increase in productivity under capitalism goes back to this principle of competition – because those who lag behind in the pursuit of extra profits through better production methods, technical progress, or more efficient organization of work lose market share to the competition, lack the resources for updating their machinery to the newest standards, and thus sooner or later lose the basis of their business. The pressure on society as a whole to grow production also follows from this dynamic of accumulation. If there is no growth, average capitalists are stuck with unrealized values, unsold goods lose their exchange value, investments decline, and the entire supply chain slows or even comes to a standstill. And, since human life reproduces itself in capitalism through markets – on which provisioning basic necessities depends – every capitalist crisis is also a social crisis.87 As we discuss below, this capitalist process of accumulation is fundamentally based on inequality, domination, and various forms of social rule. The capitalist system has to be analysed as a social relationship, including class, racial, and gender relations, the post-colonial global world system, and a form of politics comprising states and parties. And capitalism has to be analysed as a biophysical system as well.88 Growth is the materialization of accumulation The capitalist economy is defined by the drive towards accumulation. Economic growth is the materialization of this process – a materialization that is biophysical and ecological as much as it is social, as we explored in chapter 2. Economic growth is the consequence of the compulsion to make a profit, a process resulting from accumulation. But economic growth is also a condition of accumulation – without growth and the related biophysical and social processes there can be no accumulation.89 Capital is necessarily excessive; it does not know boundaries; its only drive is to grow itself – which is characterized by the fact that it only refers to itself as quantity. People’s needs play only a subordinate role: in exchange value– oriented production needs must be taken into account to the extent that they allow for meeting the conditions of extended production and reproduction of capital, and no more than that.90 That is, without workers being in a sufficiently healthy state to work, and without consumers being able and having the money to consume, capitalist accumulation would fail either to be profitable or to sell commodities, each of which is an essential condition of the continued process of accumulation and the capture of surplus value. The economy is thus driven by the pursuit of profits. Within this ‘monetary production economy’, growth results from two interlinked but different forms of investments, both of which aim at expanding the capacity to produce and accumulate: ‘Expansion can be the simple production of more machines, materials and labour power or this expansion can be the production of new forms of machines, materials and labour power, and the design of new, hitherto non-existent commodity forms.’91 While both extensive and intensive investments affect growth, it is in particular accumulation based on intensive investments that increases productivity and drives ever-expanding and changing consumer markets and permanently ‘improving’ products (for which advertisement creates the necessary demand). From the labour-centric, productivist perspective it is this latter drive which gives a historically ‘progressive’ direction to capitalism. It is this logic of accumulation, driven by competition, which, following the rules of capitalism’s development, brings about a permanent revolution of all conditions, has unfolded a previously unknown development of productive forces, and is expanding into ever-growing regions of the world but also into new areas of society. Many – including the productivist currents within the (Marxist) left – hope that capitalism will, through technical innovation, develop the productive forces to make a liberated, post-capitalist society possible.92 But it is also this dynamic of accumulation that underlies the crisis-like nature of capitalism, as we explore below. Growth as perpetual crisis In a famous passage of Capital, Marx, writing about the continuous development of the means of production in agriculture and industry through innovation, technology, and the divide between city and countryside, also discussed what has later been termed the ‘metabolic rift’: Capitalist production collects the population together in great centres, and causes the urban population to achieve an ever-growing preponderance. This has two results. On the one hand it concentrates the historical motive force of society; on the other hand, it disturbs the metabolic interaction between man and the earth, i.e., it prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; hence it hinders the operation of the eternal natural condition for the lasting fertility of the soil … But by destroying the circumstances surrounding that metabolism … it compels its systematic restoration as a regulative law of social production, and in a form adequate to the full development of the human race … All progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil; all progress in increasing the fertility of the soil for a given time is a progress toward ruining the more long-lasting sources of that fertility … Capitalist production, therefore, only develops the techniques and the degree of combination of the social process of production by simultaneously undermining the original sources of all wealth – the soil and the worker. 93 What this dialectic of capitalist development means ecologically has been much discussed, especially in the eco-Marxist tradition (see section 3.1).94 Equally important, however, is the ecology of living labour, or the capitalist tendency to exploit human labour through intensification, flexibilization, and the expansion of the working day, which leads to burnout and crises of reproduction and other social crises (see sections 3.3 and 3.5).95 The central dynamic of the accumulation process lies in the fact that due to the extreme concentration of increasingly larger amounts of capital it becomes more and more difficult to invest that capital profitably. This problem of overaccumulation occurs historically in different variants, mostly in the form of overproduction or financial crises (too many factories produce too many goods that cannot be bought in sufficient quantities; too much capital invested in certain sectors, creating bubbles). These periodically occurring crises are often overcome through the continuous incorporation of a ‘noncapitalist outside’. As feminists and theorists of colonialism and ecology have shown, following Rosa Luxemburg, capitalism is not only historically based on violent processes of appropriation (the enclosures, colonies, slavery, or ‘primitive accumulation’). Appropriation has shaped the entire history of capitalism up until today. The incorporation of non-capitalist forms of life also plays an important role in the expansion of markets, such as through the commodification of decommodified activity (as when sharing rides becomes Uber). The commodity system of capitalism (M–C– M’), based on monetary exchange and labour exploitation, is fundamentally dependent on and cannot function without the appropriation of unpaid labour and energy from humans and non-human nature. For, without unpaid inputs – both from people (unpaid domestic work or neo-colonial exploitation, but also public bailouts) and the raw materials and energy of nature – production costs would rise so far that profits would fall and accumulation would come to a standstill.96 Capitalism can be understood as a continuous movement to overcome barriers to accumulation and thus to growth.97 The stabilization of capitalist dynamics of crisis and the repression of class conflicts in some regions – such as through the ‘imperial mode of living’ in the Global North (see section 3.7) – are often connected to the relocation or externalization of crises to other regions. The appropriation of ‘women, nature and colonies’98 is often not directly visible through market mechanisms, but it is an integral part of capitalist development, being closely related to science and technology, to state and military power, and to cultural perspectives – and it is the focus of feminist and South–North criticism (see sections 3.5 and 3.7). In combination with the systemic externalization of the consequences of destructive growth (see section 3.1), this dynamic of the continuous commodification of nature generates a potentially insoluble crisis of capitalist socialization, as ‘an irreparable rift in the interdependent process of social metabolism, a metabolism prescribed by the natural laws of life itself ‘.99 Practically, this means that going ‘through’ capitalism to arrive at socialism, as accelerationists promote, is not only undesirable but also impossible, as capitalism destroys more than it can create or reorganize.100 Urbanization and growth Marx had already analysed the division between country and city as foundational to the emergence of capitalism, a theme further developed in particular by urban geographers such as Henri Lefebvre, writing at the time of the Situationists and André Gorz. These thinkers were beginning to notice that capital was no longer exclusively invested within primary or secondary production (extraction of raw materials or factory production) but was increasingly shifting towards speculation on real estate. As a way to deal with the overaccumulation of capital resulting from post-Fordist globalization, investment in real estate and land became a kind of ‘spatial fix’ (as David Harvey termed it).101 Today, roughly 60 per cent of the world’s capital is invested in real estate.102 As a corollary, urban space is a key site for resisting the flows of capital and building alternatives, much as factory production was during the Fordist era. Urban geographers now talk about ‘planetary urbanization’, noting that the planet is increasingly urbanized – and areas not urbanized are restructured, through infrastructure development and the rewiring of local institutions, to provide a standing reserve for urban development. Scholars have traced how this urbanization is driven by the capture of and conflicts over urban metabolic processes, such as water and energy use, and how it is driving material growth, in particular through concrete and steel (see chapter 2). Urban geographers have documented what is called a ‘growth coalition’ or ‘growth machine’ of elites (primarily developers and politicians) who seek to spur and manage urban growth for the sole purpose of profit, functioning as a kind of ‘real estate state’. This combined process is a key part of the ‘treadmill of production’, which refers to an infrastructural web of urban development, construction, production, and consumption that works together to further capitalist accumulation (for example, through suburbanization, malls, large useless megaprojects, gentrification, highways, and so on). As a corollary, many now claim that, even as urbanization has become a key driver of capitalist development, it is also a unique site of resistance to capitalism, through the development of municipalist politics, blocking the growth coalition from achieving its profits and building alternative urban coalitions of working-class, diverse, and ecologically-oriented communities.103 Only recently have these questions been more deeply taken up by degrowth scholars: concepts such as the ‘growth machine’, the ‘tread-mill of production’, and ‘urban metabolism’ are especially useful for a degrowth analysis, and more work can be done here to integrate them within a degrowth framework. Increasingly, the question of urbanization and housing has been explored within degrowth literature, with debates emerging on what kind of human settlements are more appropriate for a degrowth society, and the role of urbanization in driving growth.104 Dépense The concept of dépense (in French, ‘spending’ or ‘expenditure’), introduced by the French writer and philosopher Georges Bataille, has been taken up in the degrowth discussion to articulate a specific critique of capitalism. Dépense describes the usual practice in non-capitalist societies of spending the socially produced surplus as unproductive expenditure – for example, throwing a feast using the year’s surplus harvest – instead of reinvesting it. The term illustrates that the commitment to the productive reinvestment of added value is a specific feature of capitalist societies – anthropologically, however, it is a historical exception. Almost all societies see the collective, ritual, or individual expenditure of surplus – at collective celebrations, ceremonies, or in displaying collective or personal wealth through jewellery, expensive clothing, gardens, parks, and so on. The term dépense thus adds two ideas to the criticism of capitalism. First, it opens up the possibility of dealing with overproduction – a feature present in most societies as abundance to be spent collectively but solved in a very destructive way in capitalist societies through endless reinvestment. Second, it illustrates, through pointing to the expenditure of surplus in all human societies, that the logic of scarcity within capitalism is not a universal truth, but a historically contingent phenomenon. That is, it embraces the possibility that collective festivals, spending on art, or more generally democratically deciding how to dispense with the societal surplus could be not merely a luxury, but a common good. For example, societies could decide to leave fossil fuels in the ground and therefore unused, and invest resources and labour in the recultivation of large areas of land, transforming these into natural carbon sinks. By thus removing money and resources from circulation, capital would be removed from the accumulation process – a necessary prerequisite for undoing the endless accumulation that drives growth. Thus, the idea of dépense both connects critiques of capitalism and the degrowth discourse more generally, and it offers a way to go beyond a purely productivist conception of the economy (see chapter 5).105 Capitalism and scarcity Prominent degrowth thinkers have also advanced new ways to think about the intersection between capitalism, scarcity, and abundance. First, it is theorized that capitalism brings about a generalized scarcity within daily life through the enclosure of the commons and the technocratic management and regulation of common space. For example, the enclosure of grazing land and forests in early capitalist Europe led to a condition of scarcity for peasants, forcing a move to the city and integrating people into a ‘cash nexus’ (Marx). This process of creating scarcity through enclosures has since been replicated in colonized and industrializing countries such as China, as well as increasingly through land grabbing in, for example, the Amazon region, Africa, and the Pacific – for the purpose of expanding industrial plantation agriculture or resource extraction for fossil or green capitalism.106 In industrialized countries, the working class lives in a daily reality where it is now nearly impossible not to rely solely on capitalist production. For example, space is highly regulated and any alternative use of public space, such as for gardening or informal vending, becomes coded as ‘loitering’ or otherwise criminalized. Alternatively, in early industrialized countries, through a highly regularized tax and welfare system, informal, untaxed production (e.g., creating and selling craftwork for extra income) is controlled out of existence. Even as it imposes scarcity in this way, capitalism also creates a synthetic, manufactured abundance, where the sheer quantity of available goods and services gives an impression of prosperity and plentifulness – but this abundance is privatized in the household and for those individuals that can afford it, and when it is not sold, as with food waste, it is disposed of.107 Degrowth scholars such as Giorgos Kallis have argued that, in fact, this simultaneous scarcity and abundance is inherent to a growth-based system. Kallis shows how Thomas Malthus, who is often interpreted as arguing for population control to overcome economic limits, actually invoked the threat of limits to advocate for growth, arguing that scarcity is a natural fact, and that only a growth-based economy could overcome it. In this way, Malthus was one of the first ‘apostles of growth’. Since then, both neoclassical economists and elites sought to further cement the idea that growth is needed to overcome natural scarcity as common sense. But scarcity is not a natural fact. Rather, scarcity, as well as the social hierarchies that limit autonomy and self-determination, are imposed by a capitalist system of production. As a corollary, degrowth is not about imposing limits on society according to natural scarcity, but about regaining autonomy to collectively create public abundance, and also deliberate and set limits. And this – collectively setting limits – is a key prerequisite for the formation of autonomous, democratic governance, as the Greek philosopher Cornelius Castoriadis argues in his work. Indeed, it is precisely capitalism – through alienating us from each other and from the abundance of the earth – which undemocratically imposes limits on us and makes it impossible for us to set our own. Thus, just as degrowth is about the collective reappropriation and dépense of social surplus, it is also about the rejection of natural scarcity, the undoing of imposed limits set on us by capitalism and hierarchy, deliberating collective limits, and thus about creating a self-determined post-scarcity society. 108 Significance for degrowth: The role of capitalism in growth The relationship between the critique of capitalism and the critique of growth is ambivalent and complicated, characterized by mutual scepticism. Parts of the degrowth spectrum seem to be afraid of talking too explicitly about capitalism or, consequentially, to make explicit whether degrowth should actually also mean post-capitalism.109 More substantially, proponents of degrowth argue that the rejection of capitalism does not by itself imply the rejection of growth. After all, not only was real existing socialism a decidedly growth-oriented, productivist, and technocratic project, but also many of today’s proposals for socialism or post-capitalism fall short of an emancipatory growth critique.110 Nevertheless, a survey of degrowth conference-goers has shown that, by and large, most participants are critical of capitalism and see degrowth as a post-capitalist proposal – a trend that seems to be reinforced by recent publications.111 Equally, within the broader sustainability and post-growth debate, proponents of degrowth are often more amenable to a critique of capitalism than steady-state economy or post-growth proponents. Indeed, degrowth is often proposed as a more radical critique of the current society than steady-state economics or other social-ecological alternatives.112 On the other hand, scholars and activists critical of capitalism have been sceptical about degrowth. Degrowth has repeatedly been accused of formulating only a superficial critique of capitalism, of misjudging the actual drivers of growth, or of advancing individualizing appeals for renunciation. And, of course, sometimes these critiques are warranted. For example, a tendency to focus mainly on consumption, alternative indicators beyond GDP, or policy reforms can risk losing sight of the role that capitalist accumulation has in driving the growth process. The critique of capitalism presented in this section highlights that a criticism focusing solely on the spheres of circulation, consumption, or credit as central drivers of growth bypasses the actual problem: growth comes from the realization of capital. However, often, the anti-capitalist critique of degrowth does not really engage with the core arguments and proposals of degrowth, simply brushing aside what could become a fruitful encounter. In particular, a degrowth-inspired critique of capitalist growth as the materialization of accumulation could deepen widely held understandings of capitalism by focusing on otherwise neglected aspects, such as the material dimension of growth, social metabolism, appropriation, consumer society, artificial scarcity, or dépense. 113 Criticism of capitalism offers manifold starting points for the degrowth discussion, even if many approaches critical of capitalism pay too little attention to ecological questions and global justice, and are often characterized by an uncritical attitude towards production, technology, and imperial modes of living in the industrialized core that depend on global exploitation. The key question that arises from a degrowth perspective in relation to capitalism – namely, does a reduction in growth necessarily mean overcoming capitalism?114 – has been much discussed and answered in many different directions. Historical experience shows that phases of stagnation or declining GDP, if they are regional or temporary, do not immediately bring an end to the capitalist economy. Rather, they dramatically aggravate social and political crises and show tendencies towards a crisis-like monopoly capitalism, increasing inequality, processes of accumulation through appropriation, and the refeudalization of social relations.115 The question – of whether a ‘post-growth capitalism’, one fundamentally changed by radical reforms and which has brought growth to heel, is possible, or whether degrowth necessarily points beyond capitalism – will probably continue to be a controversial debate.116 Nevertheless, the critique of capitalism is necessary to understand what we are up against. As Eric Pineault puts it: A critical theory of accumulation captures the social dimension of capitalism: unequal income distribution, alienating labour processes, exploitation, class domination. A critical theory of growth captures capitalism’s appearance in the material world and the socioecological contradictions its expansive nature implies.117 Together, they make it possible to understand how these contradictions tend to find growth-based answers. Degrowth’s ecological materialism enables a critical debate about the biophysical scale and form of an emancipatory and post-capitalist society, and degrowth’s critique of capitalism, having evolved somewhat on its own, offers a unique contribution to the debate on post-capitalism. 3.5. Feminist critique The feminist critique of growth is based on the thesis that, in a capitalist economy geared towards economic growth and productivity, the vital reproductive work of society – which is largely carried out by women, in particular Indigenous and Black women, and women of colour – remains fundamentally unacknowledged, invisible, devalued, and precarious. This economic system is therefore essentially a patriarchal one. Reproductive work is the basis of every human society, including capitalist society. Reproductive or care work is understood to mean all those activities that directly serve the maintenance and well-being of people, ranging from accompanying children and the elderly to cooking, housework, caring activities, and, in some definitions, gardening or repair work for personal needs, caring for nature, or subsistence farming. These activities comprise between 30 and 70 per cent of the economic output of a country, depending on the method of calculation. In a patriarchal economic system, reproductive work is in a permanent crisis because it is structurally devalued and poorly or not at all remunerated. This crisis is necessarily linked to the crisis-like development of the human–nature relationship. The permanent crisis of reproductive work can only be overcome by a different economic system that values, centres, and promotes care work. This is the prerequisite and goal of gender justice – and centring care has become a key cornerstone of degrowth.118 Eco-feminism and feminist economics Since at least the 1980s, there has been a rich debate within feminist circles critical of growth. Yet, though feminists critical of capitalism have long discussed the problems of a society based on growth in their analyses and proposals and continue to do so, these discussions were not always included or acknowledged in degrowth discourse. In lists of the intellectual ‘fathers’ of the degrowth discussion, the ‘mothers’ often have not been mentioned at all, or only marginally. 119 This has only changed in the last few years, and feminist arguments are increasingly integrated into the degrowth discussion, in great part thanks to feminist interventions in publications and at international degrowth conferences. Not all feminist currents are compatible with degrowth ideas – many forms of liberal feminism ignore ecological questions or capitalism – but two theoretical currents of feminist critique are particularly central to degrowth: first, eco-feminism, which makes clear the connection between capitalism, patriarchy, and the exploitation of nature on a systemic level; and second, feminist economics, which criticizes the construction of the genderless Homo economicus as a central figure of economics and rejects the calculation of GDP, which does not include unpaid domestic work.120 The iceberg model What we usually see of an iceberg is only the tip that is above water, while 90 per cent is usually invisible to the observer underwater. Feminist economists have long argued that the capitalist market functions like an iceberg. What is usually identified as ‘the economy’ – commodities, labour, and investment – is in fact only the tip of the iceberg, beneath which lies an economy that is invisible, reproducing and sustaining life, and which makes the market economy possible in the first place (see Figure 3.2). All the activities that take place underwater, so to speak, are invisible to economics and its tools of measurement – and thus also to how economic policies are made and how the public evaluates different kinds of labour – but nevertheless form a foundation without which the top could not exist at all.121 GDP measures only money flows – the tip of the iceberg – and thus simply ignores most economic activity. The irrationality of this system has long been discussed, for example with reference to the ‘housewife paradox’: in theory, if a man were to marry his domestic helper, and from then on she were to run his household unpaid, GDP would be reduced. Her labour – like that of all non-market services, including those of nature – would now be ‘free’, invisible, and ‘count for nothing’.122 The marketfocused perspective of the economy denies the fundamental dependence of all economic activities upon the sphere of reproduction, which is largely done by women (and increasingly in some rich countries by precariously employed migrants) and nature – who thus come to be seen as an unlimited resource. One possibility of escaping this injustice is represented by the campaign for ‘wages for housework’ – in other words, the monetary remuneration of reproductive activities as demanded by the International Feminist Collective in 1972. This demand is also being discussed further in the context of degrowth.123 Figure 3.2. The iceberg model of the economy. Source: Community Economies Institute. Only by suppressing a large part of economic activities from economics is it possible to use the figure of Homo economicus as the basic figure of economics. Homo economicus is conceptualized as an independent, rationally acting, selfish, healthy, and genderless middle-aged person, maximizing their own benefit. Because economics starts from this extremely straitened conception of human beings, large parts of economics legitimize competition-based growth as the only reasonable goal of economic activity. 124 Exclusively considering the tip of the iceberg leads to ‘capitalocentrism’, which makes the inherent logic of all other economic forms – giving, bartering, lending, mutual aid, and so on – invisible. Thus, the idea that ‘capitalism’ is an all-encompassing system is often reconstructed and tacitly supported even by those critical of capitalism, while diverse economies remain ignored. A gender-equitable society – and thus also a degrowth economy – would need to promote non-capitalist economic activity and develop what J. K. Gibson-Graham calls a ‘community economy’.125 Gendered exploitation Any non-capitalist or ‘community’ economy, however, would be in constant danger of being eaten up by the expansion of the logic of profit and commodification. This is a central finding of feminist Marxist economic research, based on Rosa Luxemburg’s work (see also section 3.4). In order to gain a profit, capitalists must constantly appropriate ever more free resources – in the form of so-called ‘primitive accumulation’ and unpaid reproductive work.126 This ‘non-capitalist outside’ of free (or cheap) resources can be found in (still) non-capitalist subsistence societies, primarily in the Global South, and in subsistence activities within capitalist societies, such as education, care, homemaking, and gardening – which are connoted as ‘feminine’ and are largely unpaid. On the one hand, unpaid reproductive work forms the continuous free basis of capitalist production. On the other hand, capitalist production is designed for continuous expansion and is therefore constantly trying to commercialize reproduction work in order to open up new sectors, as is the case, for example, in the privatization of nursing homes and health care.127 Exploitation is justified through the framing of production and reproduction as a binary, one side of which is seen as more valuable.128 The result is a discursive hierarchy, in which ‘reproductive’ activities (subsistence labour, the ‘under-developed’ world, the home, nature, and femininity) are subordinated to ‘productive’ activities (wage labour, Western civilization, the public sphere, and masculinity). The basis of this binary is, as feminist criticism points out, at the root of the European natural sciences. Enlightenment thinkers like Francis Bacon, for example, advocated an image of the male explorer-scientist snatching the secrets of nature (conceived as ‘feminine’) from her womb, and framed nature as a properly enslaved subject of Man.129 The ‘master model’ of Western modernity, at the root of both global inequalities and environmental crises, was developed in the context of seemingly natural, irreconcilable, and hierarchically separated dualisms – man/woman, mind/body, civilized/savage, human/nature – that ‘correspond directly to and naturalize gender, class, race and nature oppressions respectively’.130 When we think of the iceberg model, we can clearly see that a vast majority of ‘feminized’ work is actually what props up the economy and allows it to function – and yet this relationship is constantly distorted, both discursively and materially. Within a patriarchal society, it seems as if wage labour is the actually important work, while subsistence and care work are unimportant. This distinction is at the root of what has been called the ‘Bielefeld subsistence approach’, first formulated in the 1980s by the Bielefeld development sociologists Maria Mies, Claudia von Werlhof, and Veronika Bennholdt-Th omsen.131 Since wage labour is centred in economic valuation, and not in subsistence, what makes life possible itself becomes distorted. As the Bielefeld theorists state with great clarity: Without subsistence production, no commodity production, but without commodity production definitely subsistence production … The process of capital accumulation – the transformation of life (living work and nature) into commodities, money and steadily increasing capital – is polarizing and irreversible. In other words: money and capital can grow out of life, but no new life can grow out of capital and money. 132 This argumentation also forms an important component of the South– North critique of growth (see section 3.7). This recognition entails that work must be redesigned completely, not by automating everything, but by transforming our very understanding of work: a good life does not involve overcoming work, but rather involves overcoming and eradicating alienation in work. Working in another way is not only about having more leisure time and less hours of waged work, an idea that makes sense mainly for men because most women – especially those with children or elderly they have to care for – spend most of their ‘leisure’ time doing care work anyway. Working differently is about sharing all kinds of necessary work equally – from care work to maintenance of material infrastructures to the production of food.133 Ways out: Queer ecologies and caring economies Since the 1990s there has been a lively debate within feminist theory about whether eco-feminist approaches are ‘essentialist’. The question is whether the analysis, according to which the oppression of women and nature is connected, does not prescribe dichotomous and generalizing biological categories (such as ‘woman’ or ‘nature’) instead of transgressing them. Therefore, some theorists such as Bina Agarwal or Rosi Braidotti no longer use the term ‘eco-feminism’. Some of the most important eco-feminist thinkers, such as Ariel Salleh and Veronika Bennholdt-Thomsen, underline that the eco-feminist argument grows out of Marxist theory and takes women as a ‘class’ – which has nothing to do with biologism but with specific social relations and a corresponding lived experience of many people socially described as ‘women’. More recent growth-critical feminist approaches agree that gender is considered a social construction in turn shaped by patriarchy and argue in addition for a constructivist eco-feminism that includes not only Marxist categories but also post-structural thinking – thus establishing links between eco-feminism and queer ecologies.134 Queer ecologies seek to reframe and trouble given relationships between nature, gender, and labour. 135 There are two key lines of argumentation. First, queer ecologies interrogate who is able to produce and reproduce, and what kind of relationships are natural. This involves questioning the imperative to procreate or expand, allowing certain activities to be non-(re)productive, as well as forging new relations with non-humans.136 Second, within patriarchy, nature and care work are often coupled together – a binary which has historically been used to justify exploitation and inequality, as already shown by eco-feminists from the 1980s onward. This binary is also the material basis for the functioning of growth-based economies, even as they must suppress natural productivity and care work in order to be profitable. True sustainability is therefore structurally impossible in such an economy – as the discussion on scarcity above makes clear. A queer ecological approach is valuable as it calls into question these binaries and points to the fact that they are socially and ecologically co-constructed and not inherently natural. A first step towards a different economic system is to dissolve the binary between the productive and reproductive spheres within the field of economics. The German Netzwerk Vorsorgendes Wirtschaften (Network of Precautionary Economics) proposes what they call a precautionary economics based on the term ‘(re)productivity’ in order to approach the economy holistically. It removes the distinction between ‘productive’ and ‘reproductive’ – human production is seen as embedded in nature’s production and reproduction activities, whether within or beyond a market economy. The basis of precautionary economics is an ‘ethics of care’ that leads to a precautionary – future-oriented, preventive, careful – rationality that serves to sustain life.137 Indeed, feminist economists also propose restructuring the current system towards a ‘caring economy’ which is not geared towards growth.138 Thus this perspective is also close to the subsistence approach, because subsistence means nothing other than supporting life. The dissolution of the binaries structuring the patriarchal logic of growth can also be understood as the ‘queering’ of the economy. 139 This not only focuses on the positions of those who identify as women or as nonbinary, but also of men: the construction of the man as a person who does not care (Homo economicus) is itself a historical one, which is intimately linked to the rise of growthism in modern societies. This ‘hegemonic masculinity’ (as Raewyn Connell terms it140) arose with the separation of productivity and reproductivity and the privileging of wage labour at the expense of subsistence labour. Thus, even patriarchy benefits certain men above others – where manhood is defined as a dominant, uncaring, seemingly independent, and strong individual, and thus the epitome of an expansionary, appropriating growth subject. More recent masculinity research has been asking to what extent ‘caring’ or ‘ecological’ masculinities can create a new understanding of masculinities and gender roles that destabilizes these binaries and could be a building block of a renegotiated economic model in which all genders can develop in many ways.141 Significance for degrowth: Foundational, and requires more engagement The reception of these approaches in the more recent discussion on degrowth can be described as double-sided. On the one hand, degrowth as a whole can be understood as an approach that integrates feminist positions: the rejection of Homo economicus as structuring image; the demand for part-time work for all, or an upgrading of subsistence work; the criticism of capitalist logics capturing more and more areas of life; and the critiq ue of the domination of nature through scientific reason are all widely accepted positions in degrowth discussions. The subsistence approach in particular – which is closely interwoven with the works of post-development theoreticians of the 1980s and 1990s, both in terms of content and its actual participants – forms an intellectual basis, albeit one often unnamed, for the more recent degrowth discussion. The feminist debates also had a strong influence on other critiques, such as the critique of industrialism, the further development of critique of capitalism, in particular the theory of primitive accumulation, as well as the socio-economic critique, in particular by questioning the concept of labour. On the other hand, feminist participants in the debate have repeatedly pointed out that explicitly feminist voices were at least initially largely marginalized in the degrowth discussion. In academic literature, the feminist growth critique is often not sufficiently discussed or is even ignored. However, in recent years this has started to change, at conferences, movement events, and in publications. For degrowth, feminist perspectives are crucial, not only because of all the analytical tools they provide, but also to prevent degrowth policies from having reactionary consequences or reproducing a gendered division of labour. Both a merging of feminist voices and movements with degrowth, as well as an increase in articles and special issues on the topics of feminism and degrowth, demonstrates a growing interest in the feminist critique of growth.142 3.6. Critique of industrialism Critiques of industrialism argue that, no matter the kind of ownership or social organization, the development of productive forces and technology in modern societies have become authoritarian, alienating, and restrictive of self-determination and therefore cannot automatically be regarded as desirable for an emancipatory society. ‘Industrialism’ refers to the overall structure of a modern industrial society based on mechanized work. With the critique of progress in productivity – the ability to produce more and more goods in ever shorter time – this critique questions the central factor by which both capitalist and socialist societies measure or have measured their success. Thus, Lenin already noted that, in the competition between capitalism and socialism, the social system that achieves the higher labour productivity will win. Critics of industrialism contend that a good life need not depend on the continued progress of productive forces. Writing beginning in the 1970s, these thinkers argued that the problem lay deeper than the competition between two hegemonic systems, and thus sought to open a conceptual third way beyond the two antagonists of the Cold War. As the social philosopher André Gorz put it: ‘To speak of industrialist civilization does not mean to deny or ignore its essential capitalist character. The fact that industrialism is common to capitalism and socialism illustrates the power and scope of this concept. For even the crisis is common to capitalism and socialism.’143 Criticism of industrialism argues that competition-driven technological development and the associated increase in productivity themselves act as growth drivers; that technology is not neutral and therefore cannot simply be detached from the logic of profit; and that increasing mechanization hampers the self-determination of people in the world of work and everyday life. In this sense, the goal of a degrowth society must be to overcome industrialism towards a post-industrial society that strives for a fundamentally different kind of technology, which means a profound transformation and democratization of the means of production and material infrastructures such as electricity networks, transport routes, and communication technologies (see chapter 5). The different strands of the critique of industrialism Criticizing modern technology and its effect on the individual and society and consumption can get you called a Luddite or accused of denying people the privileges of a modern economy. However, as argued by Peter Linebaugh, ‘Luddite’ shouldn’t actually be an insult – the Luddites in Northern England, active in the nineteenth century, broke the cotton mills because they were against participating in alienating labour and its connection to slavery in the Americas.144 And indeed, critiques of industrialism and technology arose with and critically analyse the industrial mode of production in the eighteenth and nineteenth centuries. In some cases, they also drew attention to the connection between contemporary industrialism and the development of urban and hierarchical civilizations based on agriculture – in China, European antiquity, and the Middle East.145 Criticism of industrialism is often very closely interwoven with cultural criticism of growth, and both can be linked to very different political attitudes. Part of the early intellectual critique of industrialism in the Romanticism of the early nineteenth century was conservative, antiegalitarian, and glorified the feudal class-society. At the same time, however, there are emancipatory antecedents of degrowth thought such as the Luddite workers’ revolts that took place in England, destroying mechanical looms as part of their labour struggle for better working conditions and wages.146 Criticism of technology and industrialized lifestyles was also one of the central arguments of the early socialist movements of the nineteenth century. The lifestyle movements at the beginning of the twentieth century took up these motifs again in the design of anarcho-syndicalist and ethnic settlement projects – some of them bearing proto-Nazi and eco-fascist undertones.147 This shows how important it is to combine the critique of industrialism with the other thoroughly emancipatory critiques discussed in this chapter. The world wars of the twentieth century, and in particular the development of nuclear power, gave rise to new forms of technology criticism that explicitly dealt with the destructive potential of large-scale technologies, such as Günther Anders’s Antiquated Humanity or Hans Jonas’s Principle of Responsibility. This was followed by demands for better clarity and democratic accountability regarding technology (as was advocated in E. F. Schumacher’s Small Is Beautiful). New formulations of the critique of industrialism in the 1970s have become particularly important for discussions on degrowth. Social-philosophical works such as Lewis Mumford’s Myth of the Machine, Jacques Ellul’s La Technique, ou L’enjeu de siécle, or Ivan Illich’s Tools for Conviviality are often cited. Authors such as André Gorz, Peter Harper (author of Radical Technology), or Rudolf Bahro (author of The Alternative) formulated their critique of technology on a Marxist basis and broke with the classic socialist belief in progress, according to which capitalism develops the productive forces of a liberated society. Feminist theorists such as Carolyn Merchant also expanded the critique of industrialism towards a critique of patriarchy. Technology is not neutral Complex technologies are not neutral. We can define a complex technology as one which requires global supply chains, large infrastructure, social hierarchies, and highly specialized expertise to operate. These favour or demand specific actions and power structures in production or use – a specific form of society. It does not matter whether this technology is put at the service of a capitalist or a socialist system – it unfolds a rationalistutilitarian logic of its own that cannot easily be democratized. This problem can be traced back to the emergence of modern science as the basis of today’s technology. The conceptualization of natural science as a mode of objective recognition, which breaks down nature into its smallest, unconnected components, if uncritically applied, is in itself a domineering and gendered process. While the critique of capitalism focuses above all on the rationality of increasing profits, critique of industrialism focuses on another instrumental rationality: scientific-experimental rationality, which forms the basis of technological interventions in the ecological relationships that support modern societies. Under this rationality, it is not just the fascination with technological possibilities that is the problem; it is that the machine is considered to be a model for society as a whole, and of human development. In this way, the ‘rationality of technological thinking’, as Langdon Winner calls it, in fact obscures the role of capital as an inhumane driver of social disruption, and seeks to justify it. The Silicon Valley slogan ‘move fast and break things’, coined by the Facebook CEO Mark Zuckerberg, takes this to the extreme: the disruptive character of technology is itself considered to be its source of both societal development and private profit. This is not to say that innovation or experimentation itself is bad – to the contrary, it is rather to point out the problems that arise if innovation and experimentation do not take into account their repercussions and externalities.148 Th is scientific-experimental rationality goes hand in hand with a quasireligious belief in technical progress as a saviour as originally formulated by Francis Bacon, one of the founders of modern science in the seventeenth century. 149 Lewis Mumford has noted that technological progress had emptied the concept of progress as a whole and claimed it for itself. Technological innovation becomes an end in itself: Western society has accepted as incontestable a technological imperative that is as arbitrary as the most primitive taboo: not merely the duty to promote inventions and continuously bring about technological innovations, but also the duty to submit unconditionally to these innovations simply because they are offered, regardless of their consequences for man.150 Today, this faith continues in the work of the eco-modernists, as well as of academics who champion science and technology as the main or only solution to the many-faceted crises, thus not only often promoting ‘false solutions’, but also suppressing the equally important and often more effective social innovations, democratic movements, or collective actions. It is also a common position on the left, where the development of productive forces through full automation of work and an increasing output are seen as preconditions for post-scarcity socialism.151 Yet another critique of technology comes from a feminist perspective. Techno-feminists argue that technology is often gendered as ‘masculine’ and situated outside the bounds of properly ‘feminine’ experience – even as women have had a crucial role in the development of many technologies, such as medicine and information technologies. Furthermore, technologies have a tendency to extend masculine control over nature and people, as they are designed through a hegemonically masculine lens (via large, highly centralized power sources), excluding participation by others (engineering culture, for example, being heavily male-dominated), and further oppressing marginalized groups (for example, in the racial biases manifested in artificial intelligence security technology). While many technologies extend control and impede autonomy, we can develop others that support caring, convivial relationships. Yet again, techno-feminists do not reject technology outright but take a critical yet hopeful look on the potential of certain technologies for changing oppressive relationships and undermining binaries. Thus, while recognizing that technology is shaped by dominant social norms such as patriarchy, techno-feminism seeks to go beyond pessimistic technophobia, which they argue forecloses potential for transformation.152 Finally, there is also the concern that certain complex technologies lend themselves to hierarchical, undemocratic relationships within society as a whole. For example, nuclear power plants, as they exist today, are dependent on a regime of technical experts for their management and, eventually, their decommissioning. Without sufficient decommissioning expertise, socially acceptable nuclear waste repositories, and new energy sources, nuclear power plants must keep running beyond their intended lifespan, as is the case in many Western countries today. Further, the protection of nuclear assets and the management of waste requires strong military intervention, as well as large infrastructures for containing it – which must then be kept inaccessible from the public for millennia.153 Similarly, as we explored in chapter 2, the switch from coal to oil also led to the formation of a more technocratic, dispersed energy system, as miners and dock-workers could no longer strike and block energy flows as easily. 154 In this way, considering whether a certain energy technology is desirable is not just a matter of assessing its technical ability to provide reliable power but to ask whether such a hierarchical division of labour, expertise, management, and security is amenable for a democratic society, and to what extent such an energy system necessarily restructures society towards more alienated, authoritarian, militarized, and highly centralized social systems.155 The technosphere as driver of growth The massive expansion of technical systems and infrastructures, especially since the mid-twentieth century, is a major cause of ecological problems (see section 3.1). Transport routes by land, sea, and air, power stations, electricity grids, water supply and disposal systems, global trade, industrial food systems, and cable and radio networks make the growth economy possible in the first place and are based mainly on fossil fuels. But their transformation is not easy to accomplish: infrastructures are associated with high investment costs and often create decades or even centuries of path dependencies – meaning that, once built, they continue to shape how we organize society. They are integrated into complex socio-technical systems such as motorized private transport or digitally connected means of communication. Thus, they determine large parts of everyday life. Due to the increasing complexity of technical systems, technical infrastructures themselves are becoming a driver of growth, as they require a permanent increase in complexity in a society organized according to the logic of growth – not least to deal with the problems created by exactly these systems. For example, André Gorz describes the problem of automobiles and the world they have created in a striking essay, ‘The Social Ideology of the Motorcar’: The car has made the big city uninhabitable. It has made it stinking, noisy, suffocating, dusty, so congested that nobody wants to go out in the evening anymore. Thus, since cars have killed the city, we need faster cars to escape on superhighways to suburbs that are even farther away. What an impeccable circular argument: give us more cars so that we can escape the destruction caused by cars.156 Another example: oil became the dominant source of energy due to its ease of transportation, but this has helped to cause unprecedented climate breakdown; as the climate gets hotter we begin to use more air conditioners, which in turn make local outdoor temperatures even hotter due to their heat pollution, causing cities like Doha – whose wealth is built on oil extraction – to plan open-air air conditioning systems to allow them to stay habitable, which depends on even more carbon emissions. You can see how this process eventually leads to a cascading series of Rube Goldberg machines meant to clean up in turn the side effects of each new complex technology. 157 The profit from further technical innovations tends to decrease with increasing complexity, which fuels ever faster innovation cycles. Digital processes and technologies accelerate this process even further – cars are now increasingly digitized and thus more difficult to repair, and automated driving will likely require that road infrastructure be digitized as well. This process leads to an increasing technical penetration and to dependencies in more and more areas of life – from life habits and mobility to the world of work, surveillance, and agriculture.158 The radical monopoly and the counter-productivity threshold This technical landscape affects our lives in direct and indirect ways. Ivan Illich has pointed out that, for individuals, it has a high cost and it is close to impossible not to participate in new technological developments. This is because socio-technical systems such as automotive vehicles, computers, or smartphones become a ‘radical monopoly’ in industrial societies, which undermines the self-determination of people to live a life according to their ideas.159 Social institutions become an obligation through the radical monopoly – whether explicitly, as with compulsory schooling, or implicitly, as with the use of digital means of communication. Against the notion that a degrowth society can be achieved through individual frugality, the concept of ‘radical monopoly’ makes it clear that this individual reduction is not possible at all – or it is only possible under the threat of partial or total exclusion from society. Thus, degrowth must aim at democratizing and overcoming these radical monopolies embedded in the productive forces of capitalist society. Another concept introduced by Ivan Illich is the ‘counter-productivity threshold’. This is the idea that, when something that seems beneficial is used too much, it may actually become counter-productive. We will give a longer quotation, because this also illustrates one of the reasons why, in the Southern European décroissance movement, the snail is the symbol of degrowth: The snail constructs the delicate architecture of its shell by adding ever increasing spirals one after the other, but then it abruptly stops and winds back in the reverse direction. In fact, just one additional larger spiral would make the shell sixteen times bigger. Instead of being beneficial, it would overload the snail. Any increase in the snail’s productivity would only be used to offset the difficulties created by the enlargement of the shell beyond its preordained limits. Once the limit to increasing spiral size has been reached, the problems of excessive growth multiply exponentially, while the snail’s biological capability, in the best of cases, can only show linear growth and increase arithmetically. 160 Illich argues that, at the point when a beneficial technology becomes institutionalized and becomes too large, it no longer offers a service to a society. For example, if everyone in a dense city were to drive a car individually, then no one would get the benefits of driving – since there would be too much traffic on the road. This is the point where the costs deriving from a technology start to outweigh its benefits, when it becomes counter-productive. Degrowth thus aims at collectively determining forms of technology that do not fall into these irrational traps of the ‘more is better’ ideology of technological progress, limiting the use of those technologies that stand in the way of a good life for all. Social ecology Discussions in political or social ecology have, building on Marx’s arguments, critically analysed societal relationships to nature, arguing that the development of modern societies can only be understood by examining the specific ways that metabolism with nature is shaped by human labour. Based on this materialist perspective, there has been not only the development of empirical analyses of ‘social metabolism’ itself (see sections 2.2 and 3.1), but also a critical theory of socio-natural conditions. Advocates of this perspective – also in contrast to Western social democracy and the Soviet Marxism of the early twentieth century – criticize the notion that social progress and human emancipation must necessarily include increasing and perfecting the domination of nature. In the Dialectic of the Enlightenment, Max Horkheimer and Theodor W. Adorno have sharpened this into a radical diagnosis of crisis, which remains central to the criticism of the green economy within degrowth: ‘Any attempt to break the compulsion of nature by breaking nature only succumbs more deeply to that compulsion. That has been the trajectory of European civilization.’161 Degrowth aims at breaking this trajectory. Another key analyst of this perspective was Murray Bookchin, who developed the theory of ‘social ecology’ to explain how relationships of domination and oppression between humans (along lines of class, race, gender, age, and so on) in turn shape our relationships to the natural world.162 Attempts to deal with dependency on nature by way of technological improvements (for example, through the exploitation of fossil fuels, nuclear energy, or, more recently, bioenergy) do not lead to the disappearance of nature in society. Rather, the domination of nature is ‘reflected’ in the dominations between people: it lives on in forms of patriarchal, racist, or class oppression, for example by women doing unpaid housework or by border regimes hindering people’s freedom of movement. The mastery of nature in all its variants – above all in the techno-scientific belief in progress but also in relation to modern temporality or human–animal relations – thus becomes the central object of this critique. And, moreover, the overcoming of hierarchical society–nature relations also forms the basis for overcoming domination in general.163 Alienation through industrial labour An essential argument of the critique of industrialism is furthermore that atomized, mechanized, and accelerated work processes, which are necessary for an increase in productivity, lead to an alienation of people from their activities (see section 3.3). This fundamentally undermines both the individual and collective autonomy of people or societies to decide how to lead their lives. ‘For a hundred years now, we have been trying to make machines work for people and to train people for lifelong service to them … It has been shown that machines enslave people’, writes Ivan Illich.164 A proposal to solve the problem of alienation in industrial work consists in increasing automation, so that fewer and fewer people have to toil in production.165 The proponents of automation, however, often fail to recognize that in neoliberal capitalism, people working in the service and care industries, among others, are also clocked according to industrial models, and, even then, care professions can only be automated to a limited extent because of their different work logic. Much of the service sector, certain forms of mining and extraction, and agriculture resist automation. Further, full automation may not itself be desirable (even if it were possible). For example, a sustainable, ecological agriculture requires intricate engagement with and knowledge of local ecosystems, or many caring activities can only be automatized by losing much of what we value as human. Moreover, the promise of full automation does not provide an answer to the fundamental problems of the dominance of modern technology mentioned above, nor does it itself change the terms of ownership or the form of alienated labour, nor can it account for the resource, ecological, and global justice problems associated with full automation. Therefore, thinkers critical of industrialism emphasize the need to gain democratic control over technological developments. And while this critique is not against automation per se – in the case of unpleasant, tedious, debilitating, or dangerous work, automation is desirable from a degrowth perspective – it also emphasizes the need to reconceptualize and transform work, so that we can see and enact the socially useful activities that sustain our lives as the fundamental form of participating in society, based on a logic of care.166 Significance for degrowth: Beyond appropriating technology In their 1972 ten-point programme, the Black Panthers added a demand for ‘people’s community control of modern technology’, thus highlighting a key prerequisite for any emancipatory society. 167 From a degrowth perspective, bringing modern technology into people’s hands must be accompanied by efforts to develop different, non-authoritarian technologies. Indeed, the critique of industrialism and technology, together with the feminist critique, is the strand of degrowth critique that most decisively opposes (potential) post-capitalist projects that uncritically advocate for accelerating technological innovation – whether technocentric Green New Deal proposals, digital post-capitalism, or accelerationism.168 For a nonalienating and non-exploitative technique would require that the structure of the means of production, as they have developed under capitalism and bureaucratic states and within hierarchical societies, are also fundamentally transformed. Economic growth is not progressive, not even in this regard.169 A correction of the distribution of production, or even completely different ownership of production, is not sufficient. The realization that technology, infrastructure, and production facilities not only need to be appropriated but also transformed and (partially) wound down is central to degrowth.170 Nevertheless, criticism of industrialism and technology becomes problematic when technological progress and the division of labour are generally rejected and their advantages negated. There is a danger that these critiques turn reactionary or elitist unless they are combined with other forms of critique that strongly emphasize justice. Furthermore, critiques of industrialism must come with proposals for alternative forms of economic production that are not alienating and that meet human needs and well-being. More recently in the degrowth debate, there has been an emphasis on criteria for technological development under keywords such as ‘convivial technology’, ‘convivial design’, ‘frugal innovations’, ‘digital commons’, ‘peer-to-peer’ or ‘soft digitalization’ – practices and criteria for alternative technical paths between low tech and open digitalization. In contrast to the discussions in the 1970s, which focused primarily on the risks of modern science and technology, discussions in the field of digital commons in particular also emphasize the opportunities offered by high tech.171 However, thinking about the possibility of decentralized production combined with global design has only just begun. Technical assessments (based on life-cycle assessments, and so on) of such approaches’ suitability for degrowth are still lacking, and it is also unclear whether such visions of high-tech futures adequately respond to cultural and ecological critiques.172 We expand on proposals for convivial technologies and on the need to address this gap in chapters 5 and 7. 3.7. South–North critique Here, we summarize forms of critique that examine the social and ecological consequences of development and growth from a global justice perspective. They focus on hierarchies, exclusions, and forms of exploitation that are fundamentally associated with capitalist and universalizing European civilization. These forms of critique argue that ‘growth’ and ‘development’ as well as even the ‘economy’ as a concept are twentieth-century inventions that create and maintain (neo-)colonial dependencies between regions and to enforce growth-oriented, industrialist, and capitalist lifestyles in the Global South. They also argue that since the start of European expansion in the fifteenth century, growth in the centres has been based on (neo-)colonial appropriation, extractivist exploitation of nature, and the externalization of social and ecological costs. Thus, countries in the South were reduced to the dependent role of raw material suppliers without large value-added contributions of their own, causing ever-deepening inequalities and unequal power relations. And this critique argues that these processes of appropriation and externalization are fundamental to the growth dynamics of rich societies, the balance of power within them, and the stability of the imperial mode of living. In the context of increasing ecological crises, this way of life causes systemic crises because it cannot be generalized. The origins of decolonial thought and the criticism of Eurocentrism and the associated instrumental rationality of modernity go back centuries and emerged as a counter-movement to colonialism and modernity in the Americas in Indigenous and Afro-Caribbean thought.173 In the centuries that followed, they responded to the spread of colonialism, imperialism, Western development policy, and globalization to give the ‘wretched of the earth’ a voice.174 Three important streams of this discourse pertain to the growth-critical discussion, each with their own thrust that complement the argument for degrowth. First, the post-development debate, which since the 1980s has criticized the entire ‘development’ endeavour as destructive and misguided, and which has played a central role in the initial emergence of the degrowth movement; second, the Latin American– influenced discussions about buen vivir (‘good living’) and post-extractivism, which have developed into central sources of inspiration and allies for degrowth; third, Marxian analyses of dependency, ecologically unequal exchange, and the more recent imperial mode of living. Post-development versus the Western ideology of progress The post-development approach emerged in the 1980s as a fundamental critique of ‘development’. It is closely associated with post-colonial, decolonial, and subaltern movements.175 Authors such as Arturo Escobar, Gustavo Esteva, Majid Rahnema, Serge Latouche, Wolfgang Sachs, Vandana Shiva, and Gilbert Rist argued that ‘development’ is a construct and an ideology of the West.176 Development was invented in the middle of the twentieth century as a guiding political concept – the second inaugural speech of US president Harry S. Truman in 1949 is often mentioned here – in order to promise people in the ‘under-developed’ regions integration into the capitalist world economy and its associated improvements in living standards. This promise of ‘development’ was motivated above all by the intention to provide legitimacy for late and post-colonial strategies of domination from the North towards people in the South. The universal goal – of an industrial mass consumer society characterized by capitalist wage labour – implied by ‘development’ is, however, never attainable for all due to the structure of the global world economy based on the division of labour and due to ecological limitations (see sections 3.1, 3.4, and 3.5). It is also undesirable, since it undermines the livelihoods of many. 177 Post-development calls into question the growth-based idea of progress: that Europe has worked its way up to the top of a universally recognized and desirable path of development by its own efforts, through rationality, civilization, and liberal values.178 Post-development scholars point out that the growth and prosperity of the Global North cannot be understood without colonialism, exploitation, and dispossession in the South. Post-development also places today’s development policy in its historical context, namely, the efforts beginning with the Enlightenment to ‘improve’ the colonized areas and the people characterized as ‘primitive’, those who would later be devalued by ‘race theories’, through interventions from outside.179 In contrast to ecological approaches, which are quite prominent in the degrowth discussion and which focus on the industrialization of the nineteenth and twentieth centuries, post-development thinkers focus on the destructive side of the Enlightenment and modernity in the context of colonialism starting in the centuries before. From a post-development perspective, alternatives to development are found primarily in the traditions and practices of subsistence of local communities and in movements of the Global South that oppose development ideologies. Following The Red Deal: Indigenous Action to Save Our Earth: ‘We need a revolution of values that recenters relationships to one another and the earth over profits.’180 This revolution in values has as its protagonists autonomous movements such as the Zapatistas, Indigenous struggles for self-determination, Afro-diasporic struggles, peasant movements such as La Via Campesina and the Movimento dos Trabalhadores Rurais Sem Terra (Landless Workers Movement) in Brazil, and movements opposing environmental distribution conflicts. As we discuss below, much of the degrowth discussion has highlighted the importance of supporting such movements for the purpose of building international solidarity against the growth regime and for an alliance of various alternatives to development.181 Buen vivir and post-extractivism The concept and practice of buen vivir originated in the Andes, especially in Ecuador and Bolivia, but also in Peru and Colombia. It was formulated in the last two decades as a political framework based on traditional knowledge. With a strong anchoring in the world views, perspectives, and experiences of Indigenous groups, it stands for the inseparability and interdependence of people and nature and for a life in balance: ‘What counts in the concept of ‘‘good living’’ is the human individual, integrated in their community, who cultivates harmonious relationships with nature and strives, in their personal life as well as in the community, to build a sustainable, dignified life for all.’182 Well-known proponents are Eduardo Gudynas, Maristella Svampa, Alberto Acosta, and Pablo Solón. Similar to post-development, buen vivir (in Kichwa, sumak kawsay, or in Aymara, suma qamaña) criticizes both capitalist and socialist forms of development because of their social and ecological destruction. Based on centuries of the experience of colonialism, this critique is directed against capitalist civilization with its basic assumptions of progress, competition, improvement, rationalization, productivity or efficiency, its anthropocentrism separating nature and people, and its deeply rooted patriarchy. Other non-Western concepts with a similar perspective – such as ubuntu (in South Africa), ecological swaraj and radical ecological democracy (in India), and other environmental justice movements of the poor – are also seen as partners of the degrowth movement. This diversity is being framed as a ‘pluriverse’ of visions and cosmologies – in this sense, degrowth is only one of many proposals for human flourishing beyond development.183 As a concept, buen vivir is politically contested, just like degrowth. It has been taken up in the constitutions of Ecuador and Bolivia; however, this has come with concerns of appropriation and co-optation of the Indigenous worldviews and movements that inspired the creation of the buen vivir framework. Still, its core is still practised: The ‘good life’ as the sum of experiences – many of them experiences of resistance in the truly long darkness of the colonial era and its consequences still visible today – is a vision still lived in many Indigenous communities. These are communities that have not been fully absorbed by capitalist modernity and have managed to continue to exist on its fringes. Their communal knowledge forms the basis for ideas of another world and for the change that is necessary to achieve it.184 In close connection with buen vivir, the struggles of the last twenty years have led to the development of the concept of post-extractivism, which is directed against neo-extractivism in Latin America. Extractivism is an economic model where a country is dependent on large-scale extraction of its resources and exports to the Global North, while not being able to diversify its economy and being subject to unequal trade relations. Neoextractivism describes a variant of the classical commodity-based economic model of many Latin American countries, which has been advanced by leftwing governments since the 1990s and in which successful development and social programmes have been financed by intensifying the exploitation of natural resources and the resource revenues generated as a result. While left-wing governments seek to soften hardship through social programmes, the ecological and social consequences of the extraction of fossil and mineral resources – as well as the spread of monocultures or the transformation of rainforest into rapidly degrading pasture land — continue to exist. Affected communities, social movements, and intellectuals condensed their criticism of this dynamic into the concept of postextractivism: a fundamental critique both of the ‘commodity consensus’, as Maristella Svampa calls it, of neo-extractivism and of neoliberalism, and a vision which seeks to push for the conditions for a good life, without continuing relations of extraction.185 Neo-extractivism is criticized as an ideology and practice that is linked to colonial looting (see section 3.4), which goes hand in hand with the hierarchical view of nature as an object of exploitation (as discussed in sections 3.1 and 3.6). The post-extractivist critique is particularly relevant in thinking about the global resource needs for solar panels, batteries, electric cars, bioenergy, and renewable fuels – all key ingredients of any green growth regime, all of which are sourced largely from the Global South.186 In addition, there is a growing critique of ‘green capitalism’ and the valorization of nature, a critique strongly inspired by social movements and struggles, which in recent times has also turned against recent attempts to ‘solve’ the climate crisis at the expense of people in the Global South. For example, attempts to maintain the way of life of rich countries by cultivating agro-fuels in the South lead to land use conflicts and thus promote the purchase of land in the South by investors and corporations (land grabbing). And the current practice of ‘balancing’ carbon dioxide emissions in the Global North with ‘offsets’ in the Global South (for instance, by planting monoculture forests or by creating forest reserves inaccessible to Indigenous communities) contributes to perpetuating neocolonial inequalities and driving people out of their territories, while nonetheless failing to protect the climate. According to this criticism, the ‘green economy’ is a project of domination and control that does not overcome inequality and extractivism and that only offers fictitious solutions for ecological crises.187 Through Joan Martínez-Alier and his colleagues at the Autonomous University of Barcelona, research on socioecological struggles in the Global South has been closely linked to degrowth research. The university is home to Research & Degrowth, one of the largest research networks on degrowth, and at the same time works on environmental conflicts in the Global South (through projects like the Environmental Justice Atlas, created by the organization EJOLT).188 As Alberto Acosta and Ulrich Brand argue in their book Radical Alternatives, which discusses both post-extractivism and degrowth, capitalism can only be overcome through multiple alliances between actors from the North and South. Positive concepts such as good living should be at the forefront of movement-building.189 From uneven development to the imperial mode of living The above critiques are rooted in a broader critique of deeply unequal, colonial relationships of industrialized countries with the Global South, in great part informed by critical analysis of capitalism and imperialism. Marxist theories of uneven development and unequal exchange propose that, for capitalist development to occur, it must rely on structural underdevelopment elsewhere. Development is grounded in the unequal valorization of the labour of Global South workers, as well as in the exploitation of resources, which are exchanged with industrialized nations at unequal terms of trade – raw materials, food, and labour are appropriated as ‘cheap’ inputs into the process of accumulation, while those products with a lot of added value are manufactured in the Global North. Recent studies that have quantified the drain from the Global South resulting from unequal exchange estimate this to be in the orders of magnitude of around $62 trillion over the period 1960–2018, currently accounting for up to 7 per cent of Northern GDP and 9 per cent of Southern GDP, and resulting in $152 trillion of lost growth in the Global South.190 Furthermore, uneven development is also driven by financial institutions, which lend to poor nations at higher interest rates and impose structural adjustment when debts cannot be paid. In this way, even though national debts of industrialized nations are far higher, countries in the Global South have little choice but to cut expenses on essential services and are systematically under-developed – a state of affairs which privileges industrialized nations as they maintain their monetary and military dominance. These analyses show that capital accumulation and thus economic growth in the Global North emerged historically through and currently require unequal exchange with the Global South – and thus depend on the imperial and neoliberal arrangements that enable it. As the authors of The Red Deal put it: ‘Overconsumption in the Global North … is directly enabled by the dispossession of Indigenous and Black life and imperial wars in the Global South.’191 This reality has underlined the need for building alliances between countries in the South, as well as deepening internationalism more broadly and fighting to abolish Global South debts.192 In recent years, analyses adjacent to degrowth have taken a critical look at the mode of production and living of the countries of the Global North. The debate on climate justice, for example, has integrated the critique of uneven development with ecological approaches, through the argument that industrialized nations owe a significant ‘climate debt’ to Global South nations, and a reframing of uneven development as ‘ecologically unequal exchange’. The latter theory posits that the condition of uneven development allows early industrialized economies to avoid impacts of ecologically harmful industries through importing natural resources and polluting commodities from poor countries.193 In a similar vein, the sociologist Stephan Lessenich argues that lifestyles characterized by freedom and endless possibilities were made possible through the externalization of social and ecological costs, both historically (through colonialism, climate debt, and so on) and today – some are Living Well at Others’ Expense. Externalization is a necessary, indispensable structural feature of the modern world system. Global capitalism is not only – as feminist and Marxist critics argue – dependent on the continuous incorporation of an ‘outside’ (cheap labour, land, care activities, and raw materials) but also on the outsourcing of costs.194 Global power asymmetries and exploitative relationships underlying externalization are stabilized by the ‘externalization habitus’ of majorities in the rich countries: through socially generalized practices of ‘not wanting to know’, the externalization processes and the associated structural violence are systematically repressed, split off, and projected onto others. According to Lessenich, externalization fundamentally reverses and perverts Kant’s categorical imperative, which had characterized the self-conception of the Enlightenment: always act in such a way that your actions could be generalisable for all people. Externalization is based on exclusiveness – and thus on enclosing public wealth. This exclusive prosperity, which for many citizens of the industrialized core also includes the privilege of almost unlimited global mobility, is defended by militarized border regimes. Freedom of movement and thus also life chances are asymmetrically, exclusively, and selectively denied to those who live outside the externalization societies and have lost out in the ‘birth lottery’. However, through climate change and increasing movements of flight and migration, today the externalization societies in the capitalist core are being confronted with the consequences of their externalization – and, unfortunately, reacting with increasingly reactionary and fascistic measures.195 The political scientists Ulrich Brand and Markus Wissen present a related analysis, with somewhat different emphases, with their concept of the ‘imperial mode of living’. Using a neo-Gramscian approach to hegemony, a materialist theory of the state and an understanding of everyday habits from Pierre Bourdieu, they analyse the global and ecological dimension of a specific way of life that has become the norm for many people in the Global North – such as driving a car, flying on vacation, eating a lot of meat, or consumer goods and other amenities. The core idea is that everyday life in the capitalist centres is essentially made possible through the (violent) shaping of socio-ecological relations in the Global South, and that includes the more or less unlimited access to labour power, natural resources, and pollution sinks on a global scale. The concept of the ‘imperial mode of living’ is very broad and focuses on how certain norms of production, distribution, and consumption – how we live, work, eat, and travel – became embedded in the political, economic, and everyday practices of the population in the Global North and increasingly also in the emerging countries in the South. This way of life is a paradox that on the one hand brings about and exacerbates various crises (climate change, biodiversity loss, impoverishment, social polarization), but on the other hand stabilizes social conditions in the core – where the benefits of this mode of living are concentrated – through class compromises. Furthermore, the term ‘imperial’ should make it clear that this is tied to imperial structures (military intervention, extractivism, the arms industry, international institutions, monetary hegemony, and enforced borders) which further aggravate crises such as mass migration or the unequal application of climate policy. Brand and Wissen argue for radical alternatives in the form of a ‘solidarity mode of living’.196 Significance for degrowth: Global solidarity and interdependence The various strands of South–North criticism each play a central role in the degrowth discussion. As we will argue below, degrowth can be understood as a project for global ecological justice – and in this, the South–North critique is essential. However, as with all forms of criticism, some pitfalls must be avoided. In general – similar to the praise of community in the cultural critique, which can, for example, become a justification for cuts in public services – the rejection of forms of state organization or social welfare, as advocated by post-extractivism, may tend to promote a cynical legitimation of neoliberalism. Likewise, an uncritical attitude towards local communities and cultural traditions in parts of the post-development discourse could legitimize traditional forms of rule – sometimes hierarchical and oppressive. These are important points, not least because similar criticisms can also be made of the degrowth perspective as a whole. At the same time, in emphasizing the hierarchical and exploitative relationships between centres and peripheries, it is important not to lose sight of a class analysis superimposed onto this relationship and not to homogenize entire societies or the sphere of consumption as central categories of analysis. The South– North critique can also, similarly, lead to cultural relativism – which cannot account for cross-cutting ethical commitments to human and collective rights and which may not adequately interrogate politics of nationhood or ‘blood and soil’.197 Indeed, Alain de Benoist, a French ethno-nationalist thinker of the New Right, has used the terms ‘pluriverse’ and ‘ethnopluralism’ to describe his own ideology of ethnically separate, isolated nations. To safeguard against this, degrowthadjacent advocates for buen vivir and the ‘pluriverse’ have highlighted shared commitments to diversity, tolerance of difference, interdependence, and a rejection of ethnic nationalist arguments.198 It follows for degrowth that the necessary fundamental changes are driven primarily by global democratization processes and alliances with social movements from the Global South, as well as the search for and demand for the right not to be living or compelled to live at the expense of others.199 Serge Latouche, who himself has formulated a radical critique of the Westernization of the world and of Western civilization in general, played a key role in bringing together post-development ideas with the ecological perspective of Georgescu-Roegen. Together, these perspectives formed the early core of the discourse on décroissance. As an antithesis to a single, all-encompassing ‘civilized world’ based on patriarchal, Western, and capitalist principles, the above-mentioned concept of the ‘pluriverse’ is at the forefront of recent attempts to bring together different growth-critical perspectives from around the world. These ‘alternatives to development’ from the Global South can be allies of degrowth for the development of a variety of forms of society and life, of worlds and people that coexist in and with the planet through ‘radical interdependence’.200 3.8. Growth critique outside of the degrowth debate Degrowth can be understood as the convergence of seven forms of growth critique – the ecological, socio-economic, cultural, anti-capitalist, feminist, anti-industrialist, and South–North critique. Running through these various critiques of growth is the attempt to push back against the economic as a sphere of supposedly independent rationality and against economic calculation as the main basis for decision-making. This necessarily requires a more complex, interconnected, and diverse world – which involves deliberation and weighing our conflicting values and needs as a society. We would no longer ask the question ‘Does this meet the bottom line (i.e., profit)?’, but ask instead, ‘Does this meet our needs, values and democratic decisions?’ In the next two chapters, we show how these different strands of critique have been woven together into degrowth’s central principles, the proposals that have been developed to respond to the issues raised in the critiques, and the strategies that can help us reach them. But before moving on, there is some unfinished business. In the beginning of this chapter, we mentioned some common critiques of degrowth, which claim it is antimodern, primitivist, or implicitly deriving from a position of middle-class privilege. In the remainder of this chapter, we deal more directly with forms of growth criticism that are not part of the degrowth debate. We briefly discuss various conservative, nationalist, capitalist, privileged, and reactionary growth critiques. We have already mentioned some of them throughout the preceding sections; however, taking a moment to explore them more fully can help us sharpen our understanding of pitfalls, of challenges, and of what an emancipatory degrowth perspective may look like. Conservative critiques of growth Believe it or not, several conservative critiques of growth have been put forward. Most prominently, Meinhard Miegel, the founder of a conservative think tank and one of the advisors of Germany’s neoliberal privatization of old age pensions, has argued that people in industrial countries are living beyond their means, and that due to aging populations, saturated markets, and lifestyle environmental damage, the future stagnation or even reduction of the economy is the inevitable fate of modern industrial societies. To adjust, he is in favour of a culture of modesty and ecology, but also for curtailing the welfare state, which, from his perspective, is excessive and should be replaced with a culture of volunteerism, charity, and a renewed emphasis on the family. In this way, criticism of growth and a call for ‘prosperity without growth’ becomes a justificatory instrument and lever for social cuts, privatization, and the rollback of gender relations. In essence, it recycles the neoliberal argument for austerity, now with a green layer of paint: we can no longer afford our luxuries, so we have to tighten our belts in order to preserve the existing social order. 201 A conservative criticism of growth remains uncommon since conservatives seek to reinforce the status quo and therefore ultimately want to protect economic growth – an integral component of capitalist hegemony today. Indeed, austerity is usually implemented for the sake of economic growth, not against it. So far, Miegel’s proposals have had little impact on national debates. Nevertheless, it is important to mention because it shows that a critique of growth is not in itself forward-thinking. And indeed, it is possible that such a proposal may eventually be embraced by conservative governments that acknowledge impending ecological breakdown and a changed economic reality but that take advantage of this moment to maintain, and deepen, social hierarchies. Needless to say, in the degrowth scene, such views are rejected. As degrowth fundamentally seeks to rewire our social system to one built around care, equality, and collective well-being, such a proposal runs counter to everything that degrowth stands for. The only thing that they share is an acknowledgement of current economic conditions (secular stagnation) and the need to address the social and cultural roots of ecological crises – but, even there, Miegel’s own proposal is limited in its essentially conservative, regressive wish to preserve social hierarchies rather than to disassemble them. Green fascism In August 2019, a gunman in El Paso, Texas, shot forty-six people, killing twenty-three, most of them people of colour. As with the Christchurch shooter in New Zealand in March 2019 and other eco-fascist statements, his manifesto was replete with references to blood-and-soil environmentalism, in which he opposed immigration and cultural mixing on the grounds that ‘white’ land should be protected and saved from over-exploitation by immigrants. This white supremacist belief provides the basic ideological pillar for much of the New Right and ‘alt right’ today. And in this context of the regionalist, ethnopluralist strand of the New Right, some crossover between degrowth ideas and green fascism has been documented. The intellectual leader of the New Right in France, Alain de Benoist, published a book as early as 2007 whose title, Demain, la décroissance!, was identical to the title of the ground-breaking edition of Georgescu-Roegen’s works in the 1970s. De Benoist articulated his ethno-pluralistic bioregionalism with terms similar to degrowth notions such as ‘decolonization of the imaginary’, first coined by one of the doyens of the early French décroissance movement, Serge Latouche, whom he befriended and published, or ‘pluriverse’, ‘relocalization of production’, or ‘autonomous micro-societies’. The vision, however, was one of bioregionalist green fascism – as summarized by Andreas Malm and the Zetkin Collective, ‘each race in its own habitat; no mixing and dilution; conservation of differences as against the homogenising forces of global capitalism’.202 Similar initiatives can be observed in other countries. Björn Höcke, a politician from the Alternative for Germany (AfD), the largest far-right party in Germany, argued in 2014 that ‘by the middle of the twenty-first century we will have reached the carrying capacity of our planet … We must consider what a post-growth economy looks like … We must find an economic form that reconciles ecology and economy, and that is only possible if we overcome this kind of capitalism.’203 In 2014 in Switzerland, the initiative Ecopop put forward a proposal to the national referendum to limit immigration for ecological reasons, which they called ‘Stopping overpopulation – to safeguard the natural basis for life’. Thankfully, the proposal did not pass, and yet it was surprisingly popular. In Italy, parts of the decrescita movement have cooperated with the growth-critical Five-Star Movement, which claims to be neither right nor left and in 2018 became coalition partner of the right-wing extremist and racist Lega. What brings all of these strains together is what we could call green fascism. It is the next logical step for conservatives or the formerly climatedenialist right who recognize the reality of climate change but nevertheless wish to maintain the present hierarchies between men and women, whites and persons of colour, industrialized countries and the Global South, and social classes. ‘Fascism’ is an often-misused word but here we refer to it as a form of capitalism that uses the power of the state, populist movements, and violent militias to mobilize the nation and seek to further deepen existing social and racial hierarchies and divisions. Thus, green fascists wish to strengthen borders and limit immigration, and simultaneously to reorganize society towards more green, ecological livelihoods – while further solidifying present hierarchies. Another term for this vision would be ‘climate apartheid’ or ‘green nationalism’.204 While there are different strands of green fascism – some wish for a return to a romanticized pastoral past where white people can live as one with nature, while others advocate for modernist interventions such as geoengineering, smart agriculture, and massive border walls – they share an obsession with ethnicity, conservative values, and, often, critiques of overpopulation.205 As should be clear, degrowth is fundamentally at odds with these ideas and movements – in fact, they stand for the very opposite of what degrowth strives to achieve. While ideals of localism, ecological living, and criticism of globalization and growth are shared across the degrowth spectrum, degrowth’s core thrust – its focus on global justice – runs directly counter to green fascism, and most degrowth advocates reject all social hierarchies, are committed to open borders and freedom of movement, and reject any kind of future of ‘climate apartheid’. Degrowth is a proposal for a society that ends the privileges green fascism violently defends in the name of the nation. As the populist right gains more power, and as climate change denialism becomes less viable as a political strategy, there is a danger that different critiques of growth become further absorbed by the right. For this reason, degrowth proponents must be clear in their principles, oppose all efforts (also from within the degrowth spectrum) to create links to green fascist arguments and movements, and reject any form of blood-and-soil politics – just as it rejects any capitalist growth-driven ideology. 206 Anti-modernism On Earth Day in 2020, the renowned documentarian Michael Moore launched and produced a film slated to bust ‘big green’ myths, directed by little-known filmmaker Jeff Gibbs. Planet of the Humans aimed its ire at solar power, forms of bioenergy, and ‘green’ corporations and NGOs. It sought to argue that green capitalism is not possible because of its ‘addiction to growth’ – we would agree, on that count – but then went on to hint that overpopulation was the real problem and, further, sought to dispel any belief in alternative sources of energy as being able to replace fossil fuels. Taking advantage of Michael Moore’s platform, the film did well immediately on its release, with five million views on YouTube in its first week. Planet of the Humans does not offer any deeper critique of capitalism and in large part focuses on lifestyle choices such as living in an ‘ecohouse’, adopting a plant-based diet, or ending population growth. As a result, viewers are left only with the rejection of existing technologies and are offered lifestylism as an alternative – a message which can only lead to despair or a rejection of society as a whole.207 This kind of technoscepticism is part of a wider discourse in environmental movements that tends to reject all technologies wholesale, while not offering any alternatives except for the wholesale rejection of modernity or civilization more generally. This is seen as the ‘anti-modern’ or ‘anti-civ’ form of environmentalism, which argues that it is civilization itself which must be destroyed – an argument that leads to its own misanthropic conclusions. Degrowth moves past this critique in several ways. While there is a shared acknowledgement of the limits of green capitalism, growth, and renewable energy in a growth-based economy, as well as a critique of industrialist, patriarchal, and structurally racist civilization, degrowth is by no means anti-modern or anti-civilizational. Indeed, as discussed in the next chapter, degrowth firmly criticizes specific aspects of our modern civilization while underlining the role of people’s struggles in guaranteeing and achieving equality despite its harmful, alienating, and unsustainable elements. In other words, a degrowth perspective seeks to move beyond capitalist modernity through reconfiguring current power relations, rather than escaping it or absolving oneself of the responsibility to help reshape it. Environmentalism of the rich This leads us to a last criticism of growth – mainly a critique of consumption – which we can call ‘middle-class environmentalism’ or ‘the environmentalism of the rich’.208 We have all been told to buy recycled toilet paper, fly less, and eat organic if we want to save the environment. Alternatively, we are told that more efficient cars, carbon-neutral cruise ships, and nuclear fusion power plants will solve the problems we currently face – the problem is not capitalism but whether we can adequately harness technology and markets to address the environmental impacts of growth. Middle-class environmentalism blames unsustainable growth on overconsumption and insufficient technological innovation, and either advocates for individual lifestyle changes and changes in consumption or for technological solutions to the problem. In this way, middle-class environmentalism does not see collective political action as an option, nor does it offer any kind of alternatives for working-class people who often have little choices in what they consume – and in many ways have too little. The environmentalism of the rich also does not offer much for the people of the Global South, who continue to face the burdens of unequal exchange, externalization, and an economic dependency on consumption in the North, and who are often excluded from affordable access to green technologies reserved for industrialized nations.209 Degrowth proponents do not accept these critiques of growth, first, because degrowth advocates for an ecological society that includes everyone, not just the privileged middle class of the industrialized countries, and secondly, because it stresses the need for collective and political action, rather than largely apolitical emphases on technological solutions or individual consumption choices. 3.9. Why degrowth is different Although some interpret degrowth as an essentially conservative argument because of its linguistic proximity and certain superficial similarities to regressive critiques of growth, upon closer inspection there are fundamental differences. In its ecological critique of growth, degrowth is based on scientific, empirical evidence of the impossibility of infinite growth and, further, well-documented evidence that decoupling environmental impacts from growth is highly unlikely. While some of the conservative, privileged, and regressive critiques discussed in this chapter may also refer to these findings and propose changes to the way of living that are less material- or energy-intensive, that does not mean degrowth shares other similarities. In fact, the core of degrowth, with its emphasis on ecological justice, a critique of all forms of exploitation and hierarchies, and a vision of solidarity, points to the very opposite of conservative, anti-modern, or regressive growth critiques. This call for equality and a good life for all goes hand in hand with critiques of global injustice, the imperial mode of living, and the imperialism that makes this possible. Degrowth’s strength is its holistic view. Degrowth relies not on a single strand of growth critique but has, from its very inception, braided the seven emancipatory strands discussed in this chapter together into a cohesive, well-developed, and broad critique of growth – one which includes feminist, anti-capitalist, and South–North critiques, among others. Finally, degrowth’s vision, proposals, and strategies, to which we turn in the next chapters, fundamentally contradict anything resembling these regressive growth critiques. They can never be allies, but must be debunked, excoriated in public debates, and countered in society if degrowth is to become a reality. It remains extremely important for degrowth to sharpen its own arguments in the face of criticism. To do so, it must continue to critically examine anti-modern, racist, and conservative critiques of growth, understand them, and seek to distinguish itself from them clearly. For this reason, we hope that our proposal to understand degrowth as the conjunction of the seven strands of criticism discussed in this chapter will provide some inspiration. 4 Degrowth visions Imagine you go to sleep tonight and, tomorrow morning, you wake up one hundred years into the future. What would that world look like? In 1890, the artist and political theorist William Morris published a utopian novel, News from Nowhere, describing such a scenario. A man, William Guest, returns home from an activist meeting, goes to sleep, and finds himself in a world without private property, where work is pleasurable, and where people have as much as they need to live happy lives. There are no big cities – the countryside is fully integrated into town life. There is no money system, no government, and no prison. Everyone decides everything together. Not all utopian visions are the same, but they can have commonalities. In the novel The Dispossessed, Ursula K. LeGuin imagined a planet, Anarres, without bosses, money, or centralized government, where everyone works together on a resource-scarce desert planet. The anarchist society of Anarres is high-tech but democratic, and everything is shared between everyone. In fact, the people of Anarres have decided to live on this resource-scarce desert planet, rejecting the hierarchical but much more affluent market society on a planet similar to Earth, Urras – a premise demonstrating just what autonomy and collective self-limitation might mean. LeGuin’s classic science-fiction novel – written with the aspiration of putting a ‘pig on the tracks … in a one-way future consisting only of growth’ – remains an inspiration for many activists today, looking to build a better world.1 Many of us have our own utopia – a vision of the world as we would like it to be. Books like News from Nowhere and The Dispossessed, as well as ‘near-future’ science fiction like Kim Stanley Robinson’s The Ministry of the Future, in their creativity and playfulness, help us to better imagine a world in which we would want to live, as well as how social transformation would work in practice. These are useful exercises, not just to give us hope that things could be different from the present, but also to have something towards which we can work, together. As Murray Bookchin said when talking about the importance of utopian thinking: ‘Daydreams are pieces of imagination, they are bits of poetry. They are the balloons that fly up in history.’2 Ernst Bloch famously called utopias ‘the education of desire’ – they are not just far-off dreams but here with us, visible to us through glimpses and fragments in our daily experience. But, for many emancipatory thinkers, especially in the socialist tradition, utopian thought is viewed with scepticism. Memorably, Karl Marx described the utopian socialists of his time as ‘those that write recipes for the cookshops of the future’ – an impossible and futile task. Better, he said, to start from the contradictions within present reality and the struggles resulting from these and go from there – leading to what has been called a Bilderverbot, a ban on images of utopias (Theodor W. Adorno), in critical theory. In addition, it matters who dreams up the utopian vision. In William Morris’s book, women still predominantly do the housework, while Ursula K. LeGuin also imagines an end to patriarchy and to the gendered division of labour. Utopias can be an imposition of a white and heterosexual viewpoint onto the future, or they can challenge those hierarchies and imagine a world beyond them. The tricky thing, then, about being utopian, is that it must be principled, open, and give space for many different visions for the future.3 It is clear, despite the issues of utopian thinking, that desire for an alternative can motivate us to act to change the present. Nevertheless, when presenting utopian visions not as literature but as theoretical concepts, we must be careful not to paint an exhaustive picture, but to base it on what we know about the present, be cautious about how existing power structures shape even our visions of overcoming them, and allow plenty of room for experimentation, freedom, and continuous societal change. In this spirit, recognizing the incompleteness of our knowledge, the vulnerability of life, and the desire for co-creating the future, it is important to avoid indulging in the euphoria of expert-led planning, presenting utopia as a blueprint. Rather, degrowth visions describe steps for social transformation, not an ideal final state – not only because such a state cannot exist in the first place but also because diversity of perspectives and representation is understood as a central feature of a desirable future. Thus, degrowth does not propose a universal future but a ‘pluriverse’ – a world where many worlds fit.4 No one knows what the future will look like, and, even as it is important to build on a vision that people can believe in, utopian proposals should be neither set in stone nor totalitarian and universal. In this chapter, we argue that degrowth is not only a critique of the present but also a proposal and a vision for a better future that aims to liberate the ‘social imaginary’ of growth societies. Because degrowth is a contested and multivalent concept, we start by describing five different ‘currents’ of degrowth thought and practice. These can be thought of as currents in a turbulent stream, each of them with their own characteristics but travelling in similar directions. Following this, we find ourselves in the position to propose a definition of degrowth, which consists of three common principles. This then allows us, in the next chapter, to describe more concrete political strategies for transformation, moving from the present into a degrowth utopia. 4.1. Degrowth currents Not being a blueprint or a single universal set of proposals, degrowth is a concept that continues to be fought over: it is a contested vision. In this section, we attempt to identify various imaginaries or ‘currents’ of degrowth that are present within the degrowth spectrum, and each provides different, partly complementary and partly disputed answers to the question of what a degrowth society looks like. These currents are (1) the institutionoriented current; (2) the sufficiency-oriented current; (3) the commoning, or alternative economy current; (4) the feminist current; and (5) the postcapitalist and globalization-critical current. These are idealized distinctions – they should therefore not be understood as descriptions of homogeneous groups. The terms we use to label each current emphasize the central focus of the respective set of arguments from our point of view. Naturally, each current also covers various aspects central to other currents – institutional reforms, for example, play a role in almost all currents.5 Institution-oriented current This is the current that is most likely to become a government position. Based in great part on the socio-economic and ecological critique of growth, the institution-oriented current aims to overcome the political fixation on growth and the transformation of previously growth-dependent and growth-driving institutions through reforms and policies of sufficiency. The basic orientation is green-liberal and those within this current primarily advocate for a mix of market instruments, eco-social taxes, and regulations, combined with radical reforms of institutions and broader policy frameworks. These policy changes aim at facilitating individual lifestyle changes, steering market activity in an ecological and more just direction, and making essential social institutions – from jobs to pensions to credit – growth-independent. Thus, ecological and heterodox economists have proposed policies such as ‘ecological tax reform’, redistribution, and alternative economic measurement indicators. They argue for a wide range of policy instruments that could entail a macro-economic shift away from growth and towards new conceptions of prosperity. 6 Some of the less radical post-growth proposals have already seen success, with Kate Raworth’s ‘doughnut economy’ concept guiding the city of Amsterdam’s new long-term sustainability policy, and with a conference on post-growth organized around these themes in the European Parliament in 2018. There are also, in overlap with other currents, more radical institution-oriented proposals for degrowth policies – from income maximums to work-time reductions – which we’ll discuss in the next chapter. 7 According to this current, social transformation is driven by electoral politics, governments, and national or regional administrations – as well as by non-state institutions such as companies, associations, and civil society. These would ideally change the basic conditions that allow for structural independence from growth in the wider economy. The transformation of institutions – such as the welfare state or the labour market – through political reforms is seen as a vehicle and central condition for a democratic transformation in society as a whole. In contrast to a naïve notion of conflict-free social change that prevails in parts of the degrowth spectrum, this current is concerned with emphasizing the necessity of political pressure and policy frameworks (see chapters 5 and 6). Sufficiency-oriented current Based mainly on the ecological and cultural critiques of growth and the critique of industrialism, the sufficiency-oriented current aims to radically reduce resource consumption through the creation of local and decommercialized subsistence economies, do-it-yourself initiatives, and ‘voluntary simplicity’ and thus focuses on practices outside the consumerdriven capitalist market in the here and now. In more mainstream discourse on sustainability, the term ‘sufficiency’ receives little attention. Sufficiency poses the question of the right measure – it is about behavioural changes in relation to collective limitation, reduction of consumption, deceleration, and the desire to have enough. The position of German economist and postgrowth advocate Niko Paech, with his radical critique of the decoupling myth and his proposals for ‘liberation from excess’ and to live frugally because ‘less is more’ can be taken as exemplary. 8 Similar positions are also held by the Italian Movimento per Decrescita Felice and in some of the writings of Serge Latouche.9 Latouche in particular highlights the critique of the consumerist trap of scarcity economics, in which we can only become happier by buying more things, and contrasts it to degrowth as ‘frugal abundance’, a means to escape from the productivist system and the religion of growth.10 Related concepts such as ‘voluntary simplicity’, ‘frugal living’, or the ‘slow economy’ are also frequently represented in international degrowth discussions and play a key role in some practical degrowth projects, often aligned with ‘transition town’ movements, ecovillages, and other movements for a more ‘simple life’.11 Criticism of consumption and industrialism is particularly pronounced in this current and is often combined with a pessimistic or catastrophic assessment of ecological crises and a fundamental critique of civilization. The focus on equal ecological budgets for each person globally, individual responsibilities, and change starting here and now makes this position easy to communicate and relatable. However, by thus putting the main responsibility for ecological crises on the individual it tends to ignore the class-specific significance of consumption within the societies of the Global North and can lead to an individualization and depoliticization of the search for solutions, downplaying the importance of necessary social and structural changes. This current tends to gives primacy to ecological limits, from which everything else is derived, sometimes leading to a side-lining of social questions. In his introduction to the German translation of Degrowth: A Vocabulary for a New Era, Niko Paech even explicitly excludes ‘questions of power and distribution’ from the degrowth debate, arguing that his degrowth economy is ‘not an ethical but a mathematical consequence’ of the recognition of boundaries.12 So, while some – such as Paech – see sufficiency mainly as an individual strategy for reducing consumption, in the degrowth discussion it is generally understood as a radical social project that can only be achieved under changed political conditions, social institutions, and ownership logics.13 Here, others talk about eco-sufficiency – understood more as a social-ecological transformation than an orientation towards individual change – undergirded by eco-feminist and internationalist principles, such as reproductive justice and climate debt.14 Further, initiatives such as the Global Ecovillage Network and the Transition Town movement highlight the collective nature of the sufficiency approach, as they exchange resources through global networks and also engage actively in local municipal politics. One example of the value of the sufficiency approach is Can Decreix, a vineyard in Southern France, also host to the Barcelona Degrowth Summer School. Can Decreix illustrates the possibilities of frugal, convivial living through the use of alternative technologies, agroecology, hands-on education, and their hosting of a ‘museum of useless things’. While most people may not be able to live this way due to work and life constraints, and while such efforts do not directly challenge structural systems, Can Decreix and similar initiatives like ecovillages make it easier to imagine that post-capitalist ways of living – an ‘alternative normality’ – are both possible and desirable (see section 6.1).15 Commoning or alternative economy current The commoning or alternative economy current focuses more strongly on the construction of alternative infrastructures, cooperatives based on solidarity, and non-capitalist forms of collective production and livelihood: in short, ‘nowtopias’, a term that emphasizes the possibility of realizing utopias in the here and now. 16 This current focuses on a large number of practical experiments, which often refer to initiatives such as communitysupported agriculture, commoning, solidarity/cooperative/community economies, peer-to-peer production, platform cooperatives, alternative economies, and sharing economies. A large influence here is also the solidarity economy and fair trade movements in the Global South, as well as agro-ecology and peasant struggles. With a focus on the negative impact of free trade agreements and monopoly agriculture, these movements stress sovereignty, cooperative ownership, and fair labour conditions and seek to build links with consumers and movements in the Global North to support their struggles for alternative development, for example, through initiatives such as the World Social Forum.17 Within this current, there are two main points of emphasis. The first, which is oriented around the commons, is particularly pronounced.18 This not only involves opposing the continuous enclosure of the commons – from community-managed land to solidarity projects – and continuous land seizures as the central growth engines of capitalist expansion. This current also aims to strengthen and expand common property as well as governance principles and economic activities based on and brought about by commoning. Inspired by the work of the winner of the ‘Nobel Prize for Economics’ (which is not actually a Nobel Prize), Elinor Ostrom, this perspective aims to defend and expand commons-based alternatives beyond the market and the state – such as Wikipedia, community gardens, or alternative currencies. Central to this are commoning processes, in which community and responsible relationships and rules are negotiated. The core idea is that a degrowth economy should be rooted in the commoning initiatives that already exist in the multitude of alternative economies, and that the principles of commoning should be at the centre of organizing the entire society. 19 Another emphasis is more on the commons as a path to overturning capitalism. This Marxist-inspired perspective is based on a fundamental critique of capitalist competition, barter logic, and thus the use of markets and money. The goal is a society where most forms of property are abolished, one based on an economic system without markets and in which everyone contributes according to their own means. From this perspective, the above-mentioned commons approach often cannot sufficiently challenge the demobilizing power of the state and subsequent recuperation by the capitalist economy. Take, for example, the nascent ‘sharing economy’ that was quickly capitalized on by Uber and Airbnb, or the cutting of federal funding for social services in the name of municipal democracy, as happened under austerity policies in the United Kingdom.20 These perspectives tend to engage more with large-scale construction of initiatives that can build a ‘counter-hegemony’ to the dominant economy, where cooperatives, solidarity economy networks, and confederations of citizen initiatives would, as the slogan of the International Workers of the World goes, ‘build a new world in the shell of the old’.21 Descriptors like ‘radical municipalism’, ‘libertarian socialism’, ‘social anarchism’, and ‘autonomist Marxism’ are often used to characterize this approach. It is therefore closely aligned with currents critical of capitalism and globalization but places the emphasis on local democratic commoning practices, a world ‘beyond money’ and scaled-up organization as key ingredients for overcoming any logic of exchange.22 Feminist current The feminist degrowth current is neglected in many accounts, in large part because feminist arguments have had to struggle for recognition in the degrowth discourse. Nevertheless, many of the most prominent degrowth concepts were anticipated at least since the 1970s in feminist economics and critical theory, as well as in the subsistence approach (see section 3.5). The latter clarified the connections between capitalist exploitation of housewives, smallholders in the Global South, and nature, which they rightly saw as the analytical starting point of a critique of patriarchy and capitalism. In contrast to the structural carelessness of the growth economy, feminist proposals seek to place reproductive activities and care – which form the basis for society and life in general – at the centre of the economy and economic thinking and aim to overcome the separation between production and reproduction.23 This requires, for example, a radical reduction in working hours for all while at the same time ensuring a fair distribution of care activities between people of all genders – in short, a ‘care revolution’.24 Here, transformation is understood as consisting of changed practices, subjectivities, epistemologies, and institutional reforms. A core argument is that a degrowth society can only be achieved by ending patriarchal structures both between societies and within relationships between people. The eco-feminist current also centres eco-sufficiency as a key principle of an alternative economic system.25 One more concrete manifestation of this current is the Feminisms and Degrowth Alliance (FaDA), an international and diverse network publishing analyses, proposing research agendas, and organizing talks on the intersections between degrowth and radical feminist approaches. Following the coronavirus pandemic, FaDA released a statement describing the necessary transformations needed to build a healthy, caring economy, such as paid housework and the transformation of patriarchal nuclear families into caring communities – principles which are not often discussed in other degrowth currents.26 Post-capitalist and alter-globalization currents Finally, there is the post-capitalist and alter-globalization current, characterized above all by a pronounced analysis of the growth constraints of capitalist societies and by an emphasis on its dynamics of power. From this perspective, an emancipatory degrowth society entails fundamental structural changes – from the way we work to forms of ownership – and will require social struggle to be achieved. Those advocating this approach strive to undo the domination of the market, socialize key sectors of the economy, and reduce social relations of domination.27 The understanding of degrowth as ‘socialism without growth’ (in the sense of an anti-productivist socialism from below) increasingly plays a central role in the international debate on degrowth, and is linked to eco-socialist approaches.28 This current is continuing to evolve in the degrowth literature, seeing promising development in recent years. This includes work on the history of growth within capitalism from a Marxist perspective, an important edited volume on the political economy of degrowth, and deeper engagement between degrowth, eco-socialist, and communist thinkers – in essence reviving red– green alliances such as those which emerged in the 1970s. With regard to strategy, this current focuses less on individualized solutions or changes in consumer behaviour, and only partly on nowtopias, even if the latter are seen as important areas for experimenting with non-capitalist and commons-based economies. But in contrast to commoning approaches, it is less focused on commons as self-organized solutions to collective problems than on reappropriating and socializing wealth and thus transforming the structural principles of society. This current highlights the need for systemic changes in political and economic structures such as distribution and ownership, economic democracy, and shorter working hours, as well as the necessity to restructure and dismantle certain industrial sectors – from coal to industrial agriculture to SUVs. Activists within this current advocate confrontational strategies such as direct action, which includes civil disobedience and occupations of key sites, and strong alliances with Global South struggles defending their territories.29 Although different structural levels of transformation are addressed, transformations at the personal and community level tend to be under-emphasized – the necessity of changing gender relations in private life as well as of organizing one’s own subsistence and reproduction within alternative structures is sometimes neglected in favour of theorizing within existing infrastructures such as universities and activist interventions. 4.2. Defining degrowth So, what is the core of the degrowth proposal, transcending all the different perspectives, imaginaries, and currents that we have just laid out? The different degrowth currents discussed in the foregoing section, and the various paths to get there – in all their variety and internal tensions – each emphasize important dimensions of degrowth thought. In the following, we will focus on the commonalities. We start by considering various definitions of degrowth that have thus far appeared and highlight their key elements. This then allows us to propose a definition that – based on three common principles – we hope is both open enough to incorporate the various currents and specific enough to clearly sketch the contours of a degrowth society. In unpacking the three core elements of this definition, we present key challenges that each approach towards a future society must address, and in doing so lay out the rationale behind the degrowth vision and its specificities. Towards a definition of degrowth Degrowth is, above all, a movement in motion, and should be considered an umbrella term for various movements and frameworks on the left. Nonetheless, there have been various attempts to define what constitutes a degrowth society. To begin with, degrowth is, by and large, defined as a proposal for a future society – a goal to work towards. An early and muchquoted definition comes from the Research & Degrowth research network, which stresses that degrowth describes a fair reduction of production and consumption that encompasses both human well-being and ecological sustainability: Sustainable degrowth may be defined as an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term.30 A similar definition from authors in the same network further stresses that degrowth is about industrialized countries, and that redistribution plays a central role: Degrowth challenges the hegemony of growth and calls for a democratically led redistributive downscaling of production and consumption in industrialised countries as a means to achieve environmental sustainability, social justice and well-being.31 Other definitions focus more on the process and political character of the transformation and bring political institutions into focus. According to Giorgos Kallis, Sustainable degrowth is a multi-faceted political project that aspires to mobilise support for a change of direction, at the macro-level of economic and political institutions and at the micro-level of personal values and aspirations. Income and material comfort is to be reduced for many along the way, but the goal is that this is not experienced as welfare loss.32 The loss of income and material comfort mentioned in the last sentence – often discussed as ‘voluntary simplicity’ or even ‘revolutionary austerity’, using the slogan ‘living simply so that others can simply live’33 – plays a central role in the public perception of degrowth. Economic reduction is emphasized above all in the sufficiency-oriented current. According to Niko Paech, a degrowth economy is ‘an economy … without growth of the Gross Domestic Product that has stable supply structures, albeit with a comparatively reduced level of consumption’.34 While this definition does not contain a positive vision beyond overcoming GDP and stability, others stress that degrowth can be understood as ‘a planned contraction of economic activity aimed at increasing wellbeing and equality’.35 These definitions focus above all on the overall goals of sustainability, justice, and independence from growth. Other approaches place greater emphasis on the fundamental transformation of society. For example, while no definition is given in the widely cited degrowth Vocabulary, the editors emphasize that degrowth is not only about less but also, and above all, about something different. Degrowth stands for a society with a lower social metabolism but, more importantly, a social metabolism with a different structure and that fulfils new tasks. Degrowth does not require the same to be done on a smaller scale. ‘The objective is not to make an elephant leaner, but to turn an elephant into a snail.’36 A more recent definition – from an article providing a comprehensive overview of recent research on degrowth – emphasizes this aspect of the ‘other political-economic system’ and focuses on the reduction of material and energy throughputs instead of the reduction of economic performance that had been emphasized in earlier definitions: ‘the degrowth hypothesis is that it is possible to organize a transition and live well under a different political-economic system that has a radically smaller resource throughput’.37 Likewise, the book Degrowth in Movement(s) emphasizes the transformative character of degrowth, as well as the necessity of a fundamental change to growth-oriented culture and growth-dependent capitalism: Degrowth proposes as an alternative a radically democratic reorganisation of the political and economic structures of industrialised societies, aiming at drastic reductions in resource and energy throughput while furthering a good life for all … Degrowth requires fundamental changes in everyday social practices as well as a profound cultural, social and economic transformation that overcomes the capitalist mode of production.38 These definitions appear largely similar but each emphasizes different aspects. While some focus on material consumption and sufficiency, others focus on economic growth more generally understood, while others still are focused instead on social transformation, or the end of capitalism more 1. specifically. What brings them together is the proposal for a radical transition, a politicization of metabolism itself, a focus on justice, and a critique of the present economy. In a wide-spanning analysis of different definitions of degrowth, Timothée Parrique describes three kinds of definitions which help in identifying our own: the environmentalist definition, which characterizes degrowth as decline; the revolutionary definition, where degrowth is seen as emancipation; and the utopian definition, where degrowth is seen as a destination. In emphasizing these different aspects, each kind of definition also conflicts with various currents of degrowth. For example, while some definitions highlight less material comfort, others frame degrowth as an increase in well-being. Limiting degrowth as a process only relevant to industrialized countries, on the other hand, fails to acknowledge the relevance of degrowth for the Global South, as represented in the critiques of globalization and the imperial mode of living, which cut across North– South divisions. Thus, a more nuanced definition would account for the turbulence among the different degrowth currents highlighted above. Balancing these three types of definitions, Parrique argues that ‘degrowth includes a utopia (espérance) to be reached via a decrease (décroissance), itself made possible by a disbelief (décroyance)’.39 This broad definition encapsulates degrowth as both critique and proposal, while highlighting the role of downscaling in the degrowth proposal. However, it is not as clear as to the contents of the proposal: How are decrease and utopia to be balanced? Beyond utopia as a central pillar of degrowth, what specific role does justice have in the definition? In the following, we bring together different aspects of these definitions and, balancing between degrowth currents, propose our own. This definition, we argue, is framed to go to the root of various crises we face today. Common degrowth principles for a concrete utopia A degrowth society, we propose, is one which, in a democratic process of transformation: enables global ecological justice – in other words, it transforms and reduces its material metabolism, and thus also production and consumption, in such a way that its way of life is ecologically sustainable in the long term and globally just; 2. 3. strengthens social justice and self-determination and strives for a good life for all under the conditions of this changed metabolism; and redesigns its institutions and infrastructure so that they are not dependent on growth and continuous expansion for their functioning. These three principles take into consideration the core concerns shared across the degrowth spectrum, and they can also help us to evaluate different degrowth approaches according to how strongly they emphasize or neglect each of these points. We think all three are important. Global ecological justice A degrowth society is a society that, through a democratic process of transformation, enables global ecological justice – by transforming its material metabolism, and thus also production and consumption, in such a way that its way of life is ecologically sustainable and globally just, which necessarily includes a reduction in production and consumption among the affluent. This first dimension of the degrowth definition addresses the challenge of ecological crises and global justice. Degrowth, we argue, is fundamentally about global ecological justice, or in other words, the vision of an ecologically sustainable and socially more equal world. We are talking about a world in which, on the one hand, the ecological carrying capacity of the planet is not exceeded and, on the other hand, material standards of living converge globally to enable good living for all.40 This condition for degrowth has three key presuppositions. First, it requires major lifestyle changes for the wealthiest globally, and this includes in particular those in the Global North. Second, enabling global ecological justice depends on systemic changes that lead to a transformation beyond growth. Third, it also means that the transformation by the North should not displace problems to the South. We deal with each presupposition below. First, achieving global ecological justice will require a planned contraction of economic activity to a globally equitable level and a deprivileging of those people who currently externalize the costs of their mode of living to others – humans and non-humans – elsewhere or in the future. And that means that the more affluent, who are responsible for most environmental impacts, would need to accept ‘far-reaching lifestyle changes [that] complement technological advancements’.41 A central element of a degrowth society is therefore that the material metabolism with nature, and therefore also economic production in different societies, is aligned with a long-term, ecologically sustainable, and globally generalisable level. Degrowth, in this sense, aims to replace the imperial mode of living with a solidarity-based one, to overcome the externalization society, and to foster sustainable lifestyles that end overconsumption by the affluent (which is environmentally unsustainable) and the poverty and need of the dispossessed (which is socially unsustainable).42 Degrowth has been criticized that it focuses on consumption and renunciation and its demands are thus directed against the working class in the Global North, who need more rather than less.43 However, this critique misses what degrowth is about. Degrowth explicitly aims at improving the living conditions for everyone – including those in the Global North who struggle to get along, who have to juggle three jobs to afford rent and cannot pay for health care. Degrowth, however, claims that this can be achieved without increasing overall economic output (which would be unsustainable and globally unjust) by tackling inequalities and guaranteeing public abundance. Indeed, degrowth is about challenging the very system in which working class wellbeing depends on accumulation – and shows how this can be changed. It’s not a politics of less, but a politics of enough for all. So, one might wonder, if the main goal is global ecological justice and a reduction of the biophysical size of the economy, why all this talk about economic growth? Though degrowth is often misunderstood in this way, economic contraction is not its goal, and neither should degrowth be understood as the opposite of growth. Reductions in production and consumption are, rather, a consequence of the fact that it is impossible to sufficiently decouple material throughput and emissions from growth (for evidence, see chapters 2 and 3). These are, therefore, merely a necessary corollary of the transformation towards a globally just society. 44 Still, while degrowth aims at reducing the social-ecological metabolism of Global North economies to a sustainable and globally just level, it is not indifferent about economic growth. On the contrary, for a wealth of reasons the question of economic growth is absolutely central to the degrowth discussion. One of these is that because, as the ecological growth critique shows, an absolute decoupling of resource consumption and emissions from economic growth is unlikely, and therefore reducing the consumption of nature also implies a (less pronounced, due to economy-wide efficiency improvements) reduction in economic output, also measured in GDP. 45 Let us put it another way: because degrowth aims for global ecological justice, and because it is not possible to sustain economic growth to meet that goal, degrowth also requires the transformation to an economy that does not depend on growth to meet well-being. This has profound repercussions, leading to the second presupposition. The second presupposition – that degrowth also requires systemic change beyond growth and capitalism – is one of the key consequences of the demand for global ecological justice, and explains why many in the degrowth community are critical of capitalism and seek to move beyond it. As discussed in chapters 2 and 3, the question of whether an economy is expanding or not is anything but ancillary: since capitalist societies stabilize dynamically through growth and because the logic of growth is deeply inscribed in the material, social, and mental infrastructures of growth societies, it would be grossly negligent to remain agnostic about the growth question and, by extension, but also not exclusively, about capitalism.46 Rather, degrowth confronts head-on not only the ideology of growth, but also addresses the question of transforming social and economic structures so that they ensure stability, democracy, and a good life for all under conditions of a declining economic output. The third presupposition – that this transformation must not unequally fall on the shoulders of the poor and, in particular, the Global South, but rather create the conditions for global justice – follows from the first two. Many proposals for sustainability transitions in the North, which rely mainly on green investments, green technology, and renewable energies, do in fact imply increasing extraction of key materials from the Global South, through vast demands for land to create biofuels or hydrogen, or dangerous negative emission technologies. From a degrowth perspective, a just transition in the North cannot depend on increasing extraction, exploitation, and pollution in the Global South. Rather, global ecological justice amounts to a radical redistribution of wealth, resources, and emission rights globally, resulting in the need to decrease the biophysical size of the economies of industrialized countries – or the amount of stuff that is moved through these economies and the energy needed for this. Today, this includes a serious assessment of the role of green technologies in driving mining conflicts and land grabbing in the South.47 The importance of the global justice perspective for degrowth (and thus how wrong-headed the critics are who claim that degrowth wants the poor to stay poor) can be seen from the declaration adopted during the first international Degrowth Conference in Paris in 2008. It introduces degrowth as a concept aimed at ‘ “right-sizing” the global and national economies’. Specifically, it states: At the global level, ‘right-sizing’ means reducing the global ecological footprint (including the carbon footprint) to a sustainable level. In countries where the per capita footprint is greater than the sustainable global level, right-sizing implies a reduction to this level within a reasonable time-frame. In countries where severe poverty remains, right-sizing implies increasing consumption by those in poverty as quickly as possible, in a sustainable way, to a level adequate for a decent life, following locally determined poverty-reduction paths rather than externally imposed development policies.48 In other words, degrowth in the North also necessitates ‘right-sizing’ the relationship between the North and South. As Jamie Tyberg and Erica Jung put it, the ‘contradiction between the material overdevelopment of the Global North and the extreme overexploitation of the Global South indicates that, for the latter to end, the former must end first’.49 It is therefore no wonder that degrowth proponents, who call for a reduction of production in early industrialized countries, also offer themselves as allies of environmental justice movements from the Global South.50 Inspired by the principles of environmental justice, as they guide the grassroots movements of the poor in the Global South, degrowth follows the principles of ‘cap and share’, ‘contraction and convergence’, and ‘reparations’.51 A sustainable level of consumption requires addressing not only the extremely unequal consumption between different world regions and countries, but also their historical trajectory. This means that all existing and remaining wealth, resources, raw materials, and emissions budgets would be distributed fairly, both between countries and regions of the world and within them. The ‘ecological debt’ of the industrialized countries as well as the consequences of colonialism and centuries of exploitation must also be taken into account, resulting in reparations.52 However, as argued recently by Olúfẹmi O. Táíwò, reparations can also be understood as a constructive programme of ‘worldmaking’ that aims at undoing the currently racialized and unequal global economy and systems of power, whose advantages accrue among the privileged, and at creating systems that work to the benefit of those currently disadvantaged.53 Building on this, degrowth can be interpreted as part of this future-oriented project of building a better social order that addresses the specific challenges for the Global North arising from the imperial mode of living. Global justice therefore also means standing up to the repressions of border regimes and against racism, which serve to defend the imperial mode of living for islands of prosperity in the capitalist core. In addition to combating the forces driving people to flee their home – protecting the right to remain – this must also include global freedom of movement – the right to move.54 Social justice, self-determination, and a good life The second challenge degrowth addresses is how to achieve such a transformation to a society with a much smaller metabolism and thus (due to the likely impossibility of decoupling) also a smaller economy while, at the same time, strengthening social justice and self-determination and striving for a good life for all. To achieve this, it must be asked: Under what conditions can the economic, social, and cultural rights and achievements that have been fought for in the last centuries be maintained and expanded – while the material metabolism radically declines and the economy degrows? This is not a trivial question. As we discussed in the analysis of the history of growth, ‘the mansion of modern freedoms stands on an everexpanding base of fossil fuel use’ and, we would add to this pertinent formulation of Dipesh Chakrabarty, on a base of economic growth.55 Historically, many of the emancipatory achievements people have temporarily gained in some modern nation-states – from modern democracy to workers’ rights, universal health care systems or the welfare state – were attained through social struggles within the context of a growth society and the ‘great acceleration’, and thus are intimately bound up with these. We only know modernity as a process of expansion. Is it possible to transform this ‘mansion of modern freedoms’, social rights, and welfare achievements in a way that does not depend on economic growth? Understanding how interwoven many ‘modern’ social rights and emancipatory achievements are with economic growth, the imperial mode of living, and the use of fossil resources makes clear the complexity and scale of overcoming expansionary modernity and moving towards what might with some caveats be called a ‘degrowth modernity’. Proposals for a degrowth society thus cannot avoid addressing the necessity of fundamental societal transformations, with all its repercussions. This implies asking: How can we produce the material basis necessary for a good life for all beyond growth, acceleration, and competition? In answering this question, the degrowth movement has focused on three dimensions: social justice, democracy, and well-being independent of growth. First, degrowth is about social justice. 56 The question of how a society could offer ‘basic material security’ for all people is not necessarily dependent on the distribution of monetary wealth but on the fulfilment of basic needs.57 For degrowth proponents, need-based provisioning of key goods and services does not necessarily depend on centralized bureaucracies but can also be ensured via democratically managed or commons-based infrastructure. Social justice also means undoing broader structures of domination such as class society, racism, colonialism, (hetero-)sexism, ableism and other forms of exclusion.58 Second, degrowth aims at strengthening collective self-determination beyond growth. In addition to the right to share in the ‘output’, there is also the right to have an equal ‘input’ in shaping social and economic conditions. Most degrowth approaches therefore attach great importance to the further development of democracy, autonomy, and collective selfdetermination. Derived from the work of the Greek-French philosopher Cornelius Castoriadis, ‘self-determination’ is understood here as the selfadministration of society, in which institutions and structures such as municipal energy suppliers, public banks, educational institutions, and transport systems are designed to be transparent and controllable, as well as permanently subject to questioning, critical review, and further development. Autonomy necessarily also implies collective self-limitation wherein individuals, collectives, and entire societies set rules, values, and norms.59 Self-determination of one’s own living conditions also means selfdetermination over one’s own work. The counter-image to the alienation through work in bureaucratized and industrialized contexts – as analysed in the cultural and industrialist critique (sections 3.3 and 3.6) – is the ‘postwork society’, in which various paid and unpaid, productive and reproductive, activities stand side by side on an equal footing, or a commons-based society driven by a solidarity economy. 60 An important feature of self-determination is also that it requires relational freedom; that is, it can only be realized in and through interdependent networks of relationships (see section 3.5). This can be understood through the concepts of ‘power-over’ and ‘power-to’: we can conceive of power in the negative sense of having power over someone, or in the positive sense of having the freedom to make choices. But, as the feminist Amy Allen has pointed out, there is also ‘power-with’, which is the power of solidarity, to collaborate and deliberate with others.61 In this sense, and perhaps counter-intuitively for many of those in positions of power and privilege, inter-dependence is a basic requirement for freedom. Even though, in the degrowth debate, proposals for expanding self-determination and democracy are very common and visible, the concrete form of the democratization process is still unclear. There is still much to be discussed and clarified here. Third, degrowth strives to create the conditions of a good life for all in a comprehensive sense, searching for a holistic understanding of prosperity, of which material comfort is only one part. Inspired by Latin American concept of buen vivir, which was developed on the basis of Indigenous cosmologies in the 2000s, prosperity must be detached from the sphere of economic quantifiability. 62 These other understandings of prosperity include embracing the complexity of human beings as relational beings, overcoming the separation of production and reproduction, and giving more space to needs that are not oriented towards increase and optimization – such as an abundance of time and stable and meaningful relationships.63 Some concepts that are central to these discussions are resonance, conviviality, and time prosperity. Resonance is a counter-concept to acceleration and alienation and offers a yard-stick for meaningful and good self-world relationships – instead of constantly expanding individual world reach by increasing the number of accessible goods, experiences, and encounters, the focus is on establishing fewer, but stable, axes of resonance.64 The concept of conviviality, which goes back to Ivan Illich and has since been revived, states that a good life depends not just on social justice, but also on a thriving coexistence and collective self-determination in everyday life. It means an attitude of social interaction, which is not defined by consumption and goods but by mutual respect and appreciation of social relationships (see also section 3.3).65 Finally, the concept of time prosperity points out that in accelerated societies time becomes a scarce resource and that struggles for more self-determined time beyond the dictates of markets, consumption, and competition must supplement struggles for higher wages for the poorest (and less income and wealth for the richest).66 Through these approaches, degrowth debates have attempted to develop new forms of prosperity beyond a work- and consumptioncentred mode of living – concepts that resonate with what has recently been described as ‘alternative hedonism.’67 Growth independence A degrowth society is a society that, through a democratic process, transforms its institutions and infrastructures so that they are not dependent on growth and continuous expansion for their functioning. This is the third dimension of the degrowth vision. It is based on the various forms of growth critique that show how fundamentally today’s societies are intertwined with growth and the expansion of their material, institutional, and social infrastructures. Degrowth aims to overcome all structural dependencies on growth, intensification, acceleration, and escalation. Thus degrowth does not shy away from one of the most fundamental dilemmas of our time: even as growth is not sustainable, non- or zero growth under current conditions is disastrous.68 There are four main kinds of growth dependencies: material infrastructures and technical systems; social institutions; mental infrastructures; and, finally, the economic system. At all these levels, there are institutions and infrastructures that are growth-dependent, that, in other words, are in a fundamental crisis without continuous expansion, intensification, and acceleration; and there are institutions and infrastructures – often the same ones – that drive growth, generating more expansion. For example, the social institution of schooling in its current form is dependent on growth in so far as it is financed by tax revenues and historically emerged from bourgeois efforts to formalize education. Without redistribution, schools decline in times of recession, to which governments often react with budget cuts and austerity measures. The school is also central to the production of the mental infrastructures of the competitive and performance-oriented growth subject. In a degrowth society, however, it could also – on the basis of growth-independent financing or supply – develop into a free space in which empowering education, cooperative autonomy, and democratic learning are at the centre. There is already a kernel of this possibility within the existing schooling systems, which could be extended. As this example shows, the four levels are interwoven, although we will discuss them separately below. First – as the critique of industrialism emphasizes – material infrastructures (the automobile with all its infrastructure, container shipping, energy and heat networks, deep-sea drilling for oil, distribution and disposal structures for waste, and so on) as well as large-scale, highly complex mega-projects and systems (for example, the aviation industry, nuclear power, global digital means of communication, genetically modified life) create path dependencies and growth imperatives. These will continue to require – not least due to their increasing complexity – material, energetic, and technological expansion in the future.69 The material reality of infrastructures (road, energy, or supply networks) is more difficult to change than institutions or mentalities and follows other temporalities; individualizing demands or simply thinking and acting differently have their limits. From a degrowth perspective, it is necessary to repoliticize technological and infrastructural developments, by slowing them down with moratoria (for example, on mega-projects) and by replacing them with or transforming them into convivial and growth-independent techniques and procedures.70 For example, geoengineering processes aimed at combating climate change by growing biomass over large areas, burning it, and pressing the released CO2 into the soil (BECCS) create technologically growth-oriented path dependencies and often require globally hierarchical and undemocratic forms of management. In contrast, biodiversity regions, reforestation projects carried out by local communities, regenerative farming, or cargo bike cooperatives not only make sense in terms of climate policy, but also create independence from growth and strengthen collective autonomy. We will discuss more policies in chapter 5. Second, a large number of social institutions are directly or indirectly dependent on economic growth. Key social, political, and economic institutions – labour, goods, and financial markets, pension and health care provision, public services, stable governments – are each in their own specific ways fundamentally and existentially dependent on continuous economic growth.71 That is why in every economic crisis, when growth falters – such as the 2007 financial crisis or the aftermath of the COVID-19 lockdowns – these institutions are put under immense pressure, often causing rising unemployment, supply chain problems, cuts in pensions and other public services, and rising public debt.72 A prerequisite for a degrowth society would therefore be to restructure all relevant social institutions in such a way that they can function without economic growth, or to create new growth-independent institutions that can fulfil the functions of the existing ones. Many of the core political demands of the degrowth debate lie precisely in this area. Third, in addition to built and institutional infrastructures, ‘mental infrastructures’ – the mostly unquestioned cultural patterns and attitudes, the ‘motorways in our heads’ – are also subject to a logic of increase and acceleration.73 This ranges from the ‘myth of growth’ (Tim Jackson) that ‘more’ is always ‘better’, to logics inscribed in patterns of work and consumption to competition-based subjectivities (such as those of the ‘entrepreneurial self ‘) to hierarchical human– nature relationships associated with the imperial mode of living.74 Degrowth thinkers are thus concerned with liberating the imaginary – in other words, with liberating socially accepted and widely shared ideas, convictions, and values, the selfunderstanding of a society that holds it together and legitimizes its structures, institutions, and practices.75 On the one hand, this requires an examination of alternative concepts of prosperity that make it possible to overcome the hegemony of the growth paradigm, to make concrete utopias imaginable through the ‘education of desire’.76 On the other hand, the liberation of the imaginary also requires other modes of subjectivation – other ways of understanding and positioning oneself in the world and in relation to others – based on relationality, conviviality, and resonance.77 The discussion about limiting or abolishing advertising has also been one of the core demands of degrowth discourse from the outset.78 Fourth, the basic structures of the economy are dependent on growth. On the one hand, the dependence of the economy on growth is located in sub-elements of the economic system: in the fact that unemployment rises without growth; in the debt-based monetary system, or in debt in general, which actually involves claims dependent on the future expansion of value and therefore on growth; in international competition between companies or states, which forces them to invest continuously in production and thereby to promote the extended reproduction of capital; or in the compulsion of companies to expand, which is caused by the division of labour, competitive improvements in productivity, and the financing by profitoriented investment capital or shareholders.79 Other analyses, based primarily on the critique of capitalism, but also on South–North and feminist growth critiques, point out that the functioning of capitalism itself is structurally dependent on growth and that capitalist societies can only stabilize themselves dynamically – that is, through growth. Therefore, they argue, a better future beyond growth is necessarily post-capitalist. From this perspective, questions about non-capitalist forms of economic activity such as commoning and participatory planning or other post-capitalist utopias come to the fore.80 4.3. Why degrowth is desirable We have argued that degrowth is a vision for a radically different society and economy that, though comprising different currents, shares many common principles. However, while imagining a different society may in itself be a productive exercise, the key question remains: How do we make it real? The sociologist Erik Olin Wright has developed three criteria for evaluating social alternatives: desirability, viability, and achievability. 81 In this chapter, we have been concerned primarily with the desirability of a degrowth society – as represented in the three core principles that we argue constitute degrowth, which incorporate the critiques of growth discussed in the first half of the book into a comprehensive vision for a future society. While degrowth is quite strong in presenting the necessity for change (critique) and thus the desirability of the degrowth vision, the questions of viability and achievability are just as important: How do we know whether it will work, and how can we get there? These are questions we explore in the following two chapters. In chapter 5, we discuss the kinds of policies that would make degrowth a viable proposal, giving a coherent picture of how a degrowth society could look like and function. In chapter 6, which focuses on transformation, we present a theory of change that can link the required bottom-up social movements with the large-scale policy changes needed to make degrowth concrete. Though the scale of the challenge is immense, we believe our proposal offers broad outlines for ways in which the degrowth imaginary can be made concrete. 5 Pathways to degrowth The true test of whether a utopia is worth fighting for is whether it could actually work. Indeed, this is one of the most common dismissals of utopianism when people are presented with it: ‘That’s a very nice idea, but it will never happen.’ Because, as we are often told, though capitalism may have its faults, it is the only system that is proven to work. Yet while capitalism, with its engine of growth, is leading us straight to disaster, ample research suggests a degrowth system would be viable. The economics of degrowth is not a pipe dream: in fact, though there is always room for more research, there is also mounting evidence that it could actually work.1 Degrowth, as we discussed last chapter, is only viable if it is paired with a diverse set of policies that make it sustainable, stable, and just. The good news is that these policies would, in themselves, make life a lot better. Of course, just like there is no single, unified vision of a degrowth utopia, there is also not a single path to get there, but several paths, often crossing. And when it comes to the world of policy proposals, single solutions are often fetishized as panaceas. In contrast, we know that degrowth will require experimenting with many different policies and actions to work together – from governmental policy platforms to new economic practices. While visions of a degrowth society might appear open-ended, unresolved, politically contested, and sometimes even contradictory, degrowth takes the various growth critiques as its starting point and is based on the three elements of a degrowth vision developed in the last chapter: the globally just reduction of social metabolism while at the same time striving for social justice, self-determination, and prioritizing the good life by means of transforming social institutions and infrastructures to become independent of growth. With this goal in sight, degrowth proponents elaborate political proposals and platforms. Serge Latouche, for example, described an ‘Eight R Programme’ (named after eight key concepts in French, roughly translated in English as reevaluate, reconceptualize, restructure, redistribute, relocalize, reduce, reuse, and recycle). However, there are many proposals that are not as abstract. The Research & Degrowth network developed ‘Ten policy proposals for the new left ‘ which are far more concrete. But why limit ourselves to ten? One review article by Inês Cosme et al. evaluating degrowth policy proposals found a total of twentyseven policy tools in the literature, with proposals from the reduction of environmental impacts to the redistribution of wealth and prioritization of well-being. Timothée Parrique, in his extensive research, found a total of 140 policy tools or ‘instruments’ (as opposed to policy goals or objectives) in party platforms, scientific literature, and opinion pieces related to the degrowth movement.2 Clearly, degrowth is characterized by a lively debate on concrete proposals for transformation. Even if many proposals differ greatly, they crystallize around a common nucleus. In their entirety, these proposals can be regarded as typical of the central thrust of degrowth policy: they are ‘non-reformist reforms’ (per André Gorz), or proposals for a ‘revolutionary Realpolitik’ (per Rosa Luxemburg) – reformist measures that increase popular power and provoke a destabilization and reorientation of growthoriented structures. In addition, it must be noted that, often, social movements and thinkers tend to focus on one policy above others. The movement for basic income has taken this route today: becoming a central demand for transforming the economy as a whole. However, by and large, degrowth proponents prefer a diverse policy platform and tend to approach the issue more holistically. This is because focusing on a single policy tends to minimize the amount of change needed in the whole system while failing to hedge against the possible negative effects of that policy taken in isolation. For example, if a basic income were to be implemented without further policy changes, it is likely that this would further entrench class and labour divisions between citizens of a country and migrants, who cannot access such policies. It could, furthermore, actually increase unsustainable consumption – and would not solve the alienation of labour in itself. Finally, a basic income, within patriarchy, could further push women out of the sphere of wage labour, as they may spend much of their time focusing on care work and housework instead of pursuing a profession. All this changes if a basic income is combined with other degrowth policies. So, think of these degrowth proposals as a well-balanced cocktail as opposed to asking for a single policy ‘on the rocks’. In the following, we focus on some of the most characteristic policy proposals – keeping in mind that these proposals are still incomplete at this stage, that they are, rather, a tentative attempt to think economies differently. Rather than summarizing, in detail and exhaustively, each proposal that has been put forward, we group these proposals into six clusters, each having a specific trajectory that we think is particularly characteristic of the degrowth perspective: (1) the democratization of the economy, or, the strengthening of the commons, a solidarity-based economy, and economic democracy; (2) social security, redistribution, and caps on income and wealth; (3) convivial and democratic technology; (4) the redistribution and revaluation of labour; (5) the equitable dismantling and reconstruction of production; and (6) international solidarity. We also do not want to give the impression that policy alone should be the sole driver of change. That is why, in the next chapter, we take on degrowth’s achievability: not just the kinds of policies that would make it viable but the ways in which the combination of collective action, grassroots change, and policy reforms could work together to make it a reality. 5.1. Democratization, solidarity economy, and commoning Degrowth stands for a new post-capitalist economy. It is – to put it in a nutshell – diverse, social-ecological, democratic and participatory, cooperative, needs-oriented, open but regionally anchored, and oriented towards overcoming the distinction between production and reproduction. Since these multiple economic activities have little to do with ‘the economy’, as it was invented by economists in the 1930s as a sphere of market relations (see chapter 2), degrowth is sometimes associated with an ‘escape from the economy’ – an invitation to abandon economistic thinking.3 Nonetheless, core degrowth policy proposals deal with the transformation of the economy, aiming above all to orient economic activities towards concrete needs and the common good, to democratize it and to shape it independently of growth, without exploiting people and nature. To make this possible, economic decisions must be seen as political problems. This means putting the economy in the hands of people and involving more and more people in key decisions – such as the producers in a factory, the neighbours of a farm, the users of a community-owned power plant, or the care recipients in retirement homes deciding what is produced, how to relate to the environment and other economic agents, which services are needed, and how work is organized. Seeing economic decisions as political problems also means overcoming the idea of there being a universal yard-stick to measure all activities, whether that is GDP, money, or any other indicator, or the hope of delegating efficient production to algorithms (even though they might be extremely useful as tools), and consequently to collectively deliberate about and plan societies’ economic life based on a multiplicity of relevant aspects, ranging from work (alienating or empowering) to needs (necessary or not so necessary) to resources and technology (see below), and so on. Within degrowth discourse, the economy is often thought of as diverse. A degrowth economy aims at enabling different economic activities, actors, and logics – from cooperative to public, from commons to planning – to coexist as an economic pluriverse.4 This is why degrowth is also linked to the many initiatives and movements which seek to appropriate the economy from below: from collectively administered common property, to the solidarity economy and community-supported agriculture (see section 4.4). It is argued that these initiatives, which are currently under immense pressure from competition and neoliberal markets, must not only be defended, supported, and strengthened but also that degrowth policies must create the social conditions for their flourishing and expansion. Three concepts are particularly relevant here: the commons, the solidarity economy, and economic democracy or participatory planning. The defence of existing commons and the expansion of production methods based on commons principles can be seen as a central component of a degrowth economy. Commoning is based neither on competition nor on exploitation and growth; the commons are those social practices through which self-organized communities govern certain goods, resources, or territories, according to self-designed rules and institutions. From the analysis of thousands of existing and historical commons, Elinor Ostrom identified a number of principles that distinguish successful commons – patterns of commoning that are highly relevant to structuring a degrowth alternative.5 The basic idea is to manage shared resources outside of markets based on money, competition, and centralized and hierarchical states, according to participatory and democratic rules and for the benefit of all concerned. Projects such as Wikipedia (where the world’s largest encyclopedia was created according to the principle of contribution rather than exchange), community-supported agriculture (where farmers manage a farm together with a group of consumers, who bear the costs jointly and in solidarity and distribute the proceeds among all), or the millions of examples of traditional commons that have existed for hundreds of years all around the world (in which communities manage their land, forests, water, and so on) show that this can work. ‘Commoning’ refers to the different forms of negotiation and the more permanent, autonomously managed institutions – depending on the type of goods available – that govern the access, use, management, and permanent conservation of these goods.6 The debate over the commons has gained considerable momentum due to the omnipresence of digital data, since such data can only be fit into the private property logic necessary for capitalist exploitation processes with great technical effort. For this reason, some theorists also assume that the currently progressing digitalization of productive areas (and subsequent falling marginal costs) already bears the seed of post-capitalist relations in itself. This, they argue, must be developed through suitable political conditions.7 More recently, crypto-technology advocates have argued that the rise of cryptocurrencies heralds the end of centralized banking by offering a democratic, decentralized alternative. However, at present, we can also observe steadily increasing efforts to contain or integrate digital commons into capitalist exploitation processes, as well as to use these same digital commons as means of surveillance, propaganda, and disinformation campaigns. This concerns both a commercial reorganization of areas of life such as private housing or car traffic through profit-oriented digital platforms (such as Airbnb and Uber) or non-profit digital networking such as the development of apps for neighbourhood assistance – both of which function as a band-aid for state failures.8 With regard to crypto-technology, most increasingly appear to be used as means for speculation on new forms of capital, involving the further enclosure of digital commons and relationships, rather than offering more democratically managed financial tools. From the perspective of degrowth, it is therefore important to defend and expand commons that are oriented towards the common good – based, for example, on the experience of the occupations of the Indignados in Spain or the solidarity clinics in Greece – and to promote the commonization of the economy (instead of the dominant forms of economic and digital management, or the enclosure of the commons through speculation on cryptocurrencies and digital spaces such as the ‘metaverse’).9 Many degrowth proponents postulate that smaller, social, and cooperatively organized forms of economic activity – especially cooperatives and other smaller companies oriented towards the common good – are more likely to be able to produce in a participatory manner and without the compulsion to achieve economic growth, since they are not forced to accumulate and compete by investors and shareholders. Accordingly, they should account for a much larger share of total production in a degrowth economy. 10 Central here is the movement of cooperative or collective enterprises, which can be described under the framework of a ‘solidarity economy’ and which work according to the core values of ‘cooperation instead of competition’ and ‘purpose before profit’ – ranging from small self-organized collectives all around the world to large companies such as the Venezuelan association of Cecosesola with a total of more than 20,000 members. Some see potential for a degrowth economy in the combination of cooperative principles with digital platforms in order to counter the monopoly of commercial platform providers. Demands include reforming cooperative law to support and simplify paperwork for cooperative startups, as well as the right for workers to take over production sites in the event of threatened plant closures. Others argue for the development of cryptocurrencies that do not function as capital assets, and therefore resist speculation.11 Nevertheless, the problem of a market driven by competition remains. This means that changes in wider social conditions are also important. The concept of the ‘economy for the common good’ aims at expanding socio-ecologically oriented entrepreneurial activity. According to this proposal, companies should submit comprehensive public-interest balances in which their activities are evaluated according to social, ecological, democratic, and economic criteria as well as other publicinterest criteria, to be determined democratically. In addition to transparency, this creates the basis for giving companies with good balance sheets preferential taxes and regulations. When such a policy is combined with other regulations – such as a ban on companies driven primarily by shareholders’ interests and large multinational corporations, the favouring of smaller and democratic enterprises, a different monetary order, and global trade rules based on solidarity – enterprises that least serve the democratically determined common good would continuously be pushed out of business, making space for the emergence of a non-capitalist market economy. 12 In addition to the development of the commons and the solidarity economy, reference is repeatedly made to concepts of economic democracy and the kinds of democratic investment and management originally developed in the trade union environment.13 This also includes what some call the ‘re-municipalization’ of basic services – that is, putting utilities such as water and electricity into the hands of municipalities, at which scale they can be more transparent and democratically run.14 However, the debate about these alternative frameworks for society as a whole is only just developing, especially with regard to their connections to degrowth. More broadly, economic democracy aims to contain and dismantle the high concentration of economic power in a few corporations and their connections to the state. It should enable all people to participate in economic activities and decisions as they do in other political decisions. This involves both economic regulations of all kinds (such as democratic deliberation on the question of which unsustainable economic activities should be phased out and how) and the support and expansion of the solidarity economy and commons. In addition, economic democracy is about the reappropriation of private enterprises into collective forms of ownership, abolishing decision-making hierarchies in the workplace, and encouraging collective self-determination in society more broadly. 15 This could be advanced by limiting the ownership of the means of production to a certain maximum size. The larger companies get, they would be placed under more and more democratic control, and beyond a certain size they would be transferred to common ownership.16 In addition, the principles of a participatory economy (‘parecon’) offer guidelines for a further deepening of the democratization processes of the economy, starting first within companies and then expanding out to the economy as a whole. The participatory economy is a comprehensive vision for an anarchist-inspired, non-hierarchical economy with participatory planning from below. It proposes that democratic assemblies and councils of producers and consumers would plan economic activities and a distribution of the economy’s administrative and management tasks among all in order to counteract the emergence of a bureaucratic or managerial class with more knowledge and power. 17 One question that often comes up when discussing these wide-ranging policies is how this would all be funded. A central starting point is that financial institutions would themselves be radically transformed. Rather than being controlled by the owners of capital, society’s economic surplus would be democratically managed. This involves not only the question of democratically allocating key investments, but also collectively deciding, based on goals of well-being, how to manage pension funds and other financial institutions, the investments of banks and private companies, how to spend public money, and dépense (expenditure; see chapter 3).18 This is necessary because the conversion to a sustainable, just degrowth economy would require massive investments, especially in the transition phase. For example, significant investments would be needed in institutions and infrastructures that enable a socially just life for all (ecological agriculture, decentralized renewable energies, ecological housing, collective mobility, etc.), in projects for adapting to and mitigating climate change and ecological destruction, as well as in financial transfers from the Global North to the Global South to offset historically accumulated climate debt. Since these necessary investments cannot be generated automatically and sufficiently through market mechanisms, neither today nor in the foreseeable future, a strengthening of public investments and a new democratic monetary system, including public control of central banks, are necessary. 19 This is to be supported by democratically controlled cooperative banks.20 Restructuring banking and systems of finance also means challenging the power of private and transnational lending agencies and financial institutions, ensuring that governments can spend freely on public infrastructure (for example, building on the proposals of modern monetary theory, or MMT, which is also at the core of radical Green New Deal proposals).21 In line with this, and to make all of this possible, it is also important to radically shrink, reorganize, and democratically control financial markets and institutions in order to put them at the service of people and their economic interests. Giorgos Kallis and colleagues thus propose ‘changing money systems by limiting the domain of general purpose money, creating positive (or public) money, forbidding private banks to create new money through loans, and supporting community currencies and time-banks’.22 Restructuring financial institutions is one thing, but there are also other possibilities for funding the transition. First, abandoning subsidies for and taxing harmful industries, not least the fossil fuel industry, would generate significant sources in the short term. The withdrawal of funding from the military industrial complex – which emits more greenhouse gases than most countries and drives imperial, uneven relations worldwide – would open up massive opportunities for reinvestment as well as relieve pressure on other countries to funnel resources into national defence instead of a just transition. Second, as explained in the next section, taxing extreme wealth would also raise significant amounts of funding. Third, while financial capital would eventually shrink in the aggregate, kinds of wealth would eventually be diversified, for example, through the promotion of local currencies and the prioritization of reproductive labour and leisure activities. As a result, though switching to a degrowth economy would initially take significant capital, eventually it would lead to an economy where capital no longer dominates and fades out – in other words, to postcapitalism.23 It is clear, however, that the question of financial restructuring and funding the transition certainly requires further exploration, both through macro-economic modelling and real-world experimentation. Beyond democratizing the economy, there is also the question of democratizing politics. Electoral representation is seen by many as insufficiently democratic. Our representatives have little accountability to voters once they are elected into office, and politicians are often in a revolving door with industry, being offered positions on boards and as CEOs of companies as soon as their term is over. Systems of governance are also highly discriminatory, systematically prioritizing persons with gender, class, or race privileges to leadership positions. By and large, proposals for transforming a highly corrupt and alienating political system involve either ensuring that representatives are accountable to their constituents by developing institutions that support deliberative, participatory politics or replacing electoralism altogether. Proposals include, for example, instituting citizen assemblies and women’s councils; participatory budgeting and taxation; forbidding politicians to take up positions in industry following their term; or even mandating ‘sortition’, in which citizens are nominated and selected in lots as representatives – reducing the professionalization of politics entirely. One proposal to eliminate electoralism while still enabling a scaled-up trans-local system of governance is democratic confederalism, where local citizen assemblies nominate a recallable delegate to take part in regional and national assemblies – a system currently practised in northern Syria, inspired by Abdullah Öcalan’s political philosophy. 24 5.2. Social security, redistribution, and caps on income and wealth In the transformation to a degrowth society, the redistribution of wealth will become fundamentally important. If the traditional and growth-based idea that redistribution is equivalent to the sharing of economic surplus no longer works, then the distribution of income and wealth becomes an explosive issue and there will need to be entirely new mechanisms for furthering equality and guaranteeing social security for all. In other words, because society will no longer be oriented towards the increase of GDP, taxation and money transfers based on the annual surplus generated by economic growth will no longer be viable as the key mechanism for the redistribution of wealth and for financing welfare states. Thus, innovative proposals to create equal access to resources, and ideas for a fundamental transformation and broadening of social security and basic services, have been core degrowth demands from the very beginning. These proposals can substantially improve living conditions for most people. Alongside other policies that also aim at social justice, such as ecological tax reform or reduction in working hours, which are discussed in later sections, most of these proposals aim at reappropriating and socializing the resources of the rich through effective taxation and income and wealth caps and to withdraw from the market, or decommodify, the supply of goods and services necessary for a good life for all. It is therefore demanded that basic goods and services such as housing, food, water, energy, local transport, and communication, education, and health be made available to all regardless of the current rate of economic growth or individual income. This should take place largely beyond the market, for example, in the form of public access for all, municipal cooperatives, or through commoning.25 Not coincidentally, public services have the added benefit of having much smaller environmental impacts than their private and individual equivalents: think buses, trains, and tramways instead of cars.26 Still, the most popular proposal for the radical restructuring of social security systems remains unconditional basic income. This is a recurring cash transfer for all members of society, awarded without obligation to work or threat of repression, and enough to ensure the full participation in society. Some advocates of a basic income see it explicitly as an entry-point into a degrowth society. Some have also proposed an ecological basic income, where an unconditional basic income is financed by progressively increasing taxes on ecologically harmful consumption, thereby reducing the potentially negative effects of increased ecologically harmful activity. 27 Beyond the basic income, the French décroissance movement has put forward a supplementary proposal called dotation inconditionelle d’autonomie – an unconditional gift or endowment of autonomy, which could also be translated as ‘unconditional basic services’. As an alternative or supplement to the basic income paid in money, it should grant all people – from birth to death – access to democratically determined basic goods as a social right. These include the right to housing and access to land (a certain number of square metres per person), the right to dignity (a minimum amount of locally produced food and goods for basic needs such as clothing, furniture, and bicycles), access rights to water and energy, the right to mobility (free local transport, reliable long-distance transport), and finally the right to access public services such as health, education, culture, information, childcare, care for the elderly, assistance for people with disabilities, funerals, and so on. All these rights should be guaranteed through processes of the reappropriation and democratization of existing infrastructures.28 Since this would lead to the progressive demonetization of society – a democratically organized public supply beyond the market, and thus a partial exit from ‘the economy’ or from money and credit as the medium of mediation – this proposal in particular lends itself to a degrowth vision. Degrowth proposals also aim to radically cap the accumulation of wealth in the hands of an affluent minority. In 2020, CEOs in the United States were paid 351 times as much as an average worker – this was up from just 20 times as much in the 1950s. Globally, the richest 10 per cent own around 60 to 80 per cent of all existing wealth, leaving less than 5 per cent for the poorest half of humanity. 29 An unequal distribution of income is not only radically undemocratic from an egalitarian perspective, but an individual’s material footprint is also closely correlated to their available disposable income. Globally, according to Oxfam, the richest 1 per cent are responsible for over twice as many carbon emissions as humanity’s poorest half. Similar – though somewhat less extreme – inequalities exist within countries.30 Ecological justice requires the radical equalization of income and wealth.31 As has been argued by Thomas Piketty, among others, curtailing the wealth of the rich might be among the most effective levers to reducing emissions (think not only private jets, yachts, and energy-consuming villas, but also investments), and this certainly is a precondition to making societywide changes acceptable.32 Thus, degrowth not only demands a guaranteed basic provisioning or income for all but, equally importantly, also focuses on the opposite: redistribution aimed at taxing the rich out of existence, reappropriation, and caps on maximum income and wealth. This demand, a key component in the political repertoire of the degrowth spectrum, can be thought of as capping incomes at two, five, or ten times the basic income of society – or, during a transition phase, at x times the minimum income in a specific business or sector. In addition, degrowth also advocates fundamental changes to the way private ownership structures society. These include taxation of inheritances, since these stabilize inequalities and class hierarchies over generations. But there is also a demand to severely restrict income not dependent on labour itself but on ownership of property such as land, buildings, or intellectual property (referred to by economists as ‘unearned income’) or to abolish them altogether through other ownership structures.33 In fact, as discussed in the previous section, a degrowth economy requires a very fundamental overhaul of the private property regime to create the conditions in which all have the resources to fully participate in creating welfare for all. The goal of these proposals is to achieve – in the process of socialecological transformation and the necessary phaseout of larger parts of the economy – a more egalitarian society, and thus a mode of living based on solidarity that does not transgress ecological boundaries globally. The decisive point in this context is that anyone who wants to achieve a degrowth economy democratically must address extreme distributional injustices and the fear of poverty. The project will only gain political legitimacy if an increase in social justice and equality can really be felt by all. 5.3. Convivial and democratic technology From the degrowth perspective, the social-ecological transformation means not only the democratization of the economy and a radical redistribution of resources, but also a profound restructuring of the material-technical basis of society, as called for by the critique of industrialism and technology. A fundamental change in the productive forces of modern industrial societies requires both different technical models and changed ownership structures: as long as the primacy of economic efficiency – rather than criteria of sustainability and utility – dominates design processes and investments in technical infrastructures, this transformation will not succeed.34 Instead of the general hostility to technology that is often assumed to be a hallmark of degrowth, degrowth is characterized by a differentiated view of technology and the democratization of technological development. The question degrowth puts at the centre is: Which technology should society use? And for what, by whom, how, and how much of it? And who decides? It is also a matter of opposing the myth of unstoppable and independent technological progress, the continuous increase of productivity, and the constant improvement of social productive forces (as it also prevails in large parts of the techno-futuristic left35) and about offering a democratic alternative. How we think of technology influences technological development, the public perception of technology, and thus also research funding and the distribution of subsidies. One attempt to develop a concept of technology for the degrowth debate is the design of convivial technology, based on Ivan Illich’s concept of ‘convivial tools’.36 While sustainability discourses in the broader sense primarily emphasize the ecological impact of technologies, the concept of convivial technology emphasizes the social and cultural effects of technological development, not only in use but also in the manufacturing process. Examples of spaces that encourage the development of convivial technology today include tool-lending libraries, repair cafés, do-it-yourself spaces, and some ecologically and non-commercially oriented hacker spaces, maker spaces, or fab labs.37 The concept of convivial technology includes five central values for technoloigical development in the sense of a degrowth perspective: connectedness, accessibility, adaptability, bio-interaction, and appropriateness. Connectedness asks in what way a technology shapes the relationships between people, both in terms of its production and use or infrastructure. The majority of technical equipment used today, for example, contains metallic elements that are predominantly mined under exploitative conditions in the Global South. From a degrowth perspective, it is a matter of developing and promoting technologies that are produced under fair conditions, the infrastructures necessary for the operation of which do not destroy local communities, and which are organized on a decentralized and equal basis. Accessibility asks where, by whom, and under what circumstances a technology can be (further) developed and used. From the perspective of degrowth, this means, among other things, promoting the technological literacy of women in particular, putting publicly funded technology under open source licenses, and not preventing technological development through profit-driven patents. Adaptability is about the extent to which a technique can be used independently, how easily it can be extended and coupled with other techniques, and how this can be facilitated by standardizing basic components. From a degrowth perspective, this encourages longer warranty periods and guaranteed reparability, as well as control over one’s own data in digital space, since internet users could then safeguard the information they share across different platforms. Biointeraction means the interaction with the living world: What effects does a technology have on living organisms, whether humans, animals, or plants, as well as on entire ecosystems? Degrowth thinkers are calling for technologies to be considered over their entire life cycles, from resource procurement to disposal, and for the precautionary principle to be applied when assessing the health and environmental risks of new technologies – emphasizing caution, pausing and reviewing before launching into new innovations that may have far-reaching and irreversible (unintended) consequences. Such technologies aim to achieve a closed-loop economy that is as complete as possible, in which all industrial raw materials are completely recycled and all degradable raw materials are returned to the ecological cycle. The fifth dimension of convivial technology, appropriateness, involves assessing whether a certain technology is appropriate for the task to be performed. In a degrowth society, technologies should maintain a meaningful relationship between the time and material resource input and what is to be achieved. This means, for example, moving around in a largely car-free city with public transport, (cargo) bicycles, and on foot – thus being faster, emitting less, and conserving more resources.38 Along these five dimensions, products and technologies can be qualitatively assessed over their entire life cycle. Instead of the most profitable technologies and innovations – driven by capitalist competition and military research – asserting themselves, which makes a continuous increase in production possible, technological development should require multidimensional evaluation. The aim is to promote convivial forms of technology as well as collective deliberation about technology. A central demand is for a comprehensive civil society assessment before the introduction of new technologies with consequences for society as a whole, as well as for a moratorium on high-risk research and technologies.39 On the basis of these criteria, it also becomes clear why, for example, criticism of cars and individualized mobility is so widespread across the degrowth spectrum.40 In principle, technological development in a degrowth society is not market-oriented but needs-oriented, which should lead to a radical change in the form and direction of the future development of society’s productive forces.

[PARAGRAPH BREAKS RESUME]

5.4. Revalorization and redistribution of labour

Work is an important focal point of the degrowth debate, not least because all growth critiques essentially revolve around work. The main proposals in this area are: a radical reduction in working hours without lower pay groups losing income; access for all to good, non-alienated, and meaningful work; a valorization of reproductive and care work and the distribution of this work among all; collective self-determination in the workplace; and, finally, the strengthening of worker’s rights and autonomy through the provision of basic services, independent of people’s employment. Through this, and in combination with the other policies discussed in this chapter, degrowth aims at fundamentally transforming work – by phasing out unnecessary and destructive work, automating as much as possible those necessary activities that cannot be made empowering, making those activities that sustain social life as pleasurable as possible, and giving those that do the work autonomy in their workplaces, thus continually transferring economic activities to a logic beyond the imperatives of accumulation.41

The degrowth perspective on work is fundamentally a question of foregrounding the entirety of work – as has been emphasized above all by feminist thinkers. This includes all socially necessary activities, which today are often seen as separate from employment, including subsistence, care, and voluntary work (see section 3.5). The goal of a degrowth society is to put the reproduction of life, earthcare labour, or what Stefania Barca calls the ‘forces of reproduction’ at the centre of society and to think about the economy from this viewpoint: What are people’s (and the planet’s) needs and how can they be fulfilled? The foregrounding of care is intended to overcome the division of the economy into a monetized portion (paid wage labour, dominated by men, and politically and economically privileged) and a non-monetary portion (reproductive work, care activities, not paid at all or poorly paid, mostly done by women and migrants, and devalued).42

An obvious and much-discussed entry point towards achieving these goals is the significant reduction in working hours for all – the ‘enjoyable reduction of work’.43 One goal here is to reduce harmful and senseless activities both in terms of production and consumption – such as ‘bullshit’ and ‘batshit’ jobs.44 Reducing working hours is a goal in and of itself, since it liberates time. But it can also ensure a balanced distribution of employment in which the economy stops growing even as productivity continues to rise. In a capitalist society, the product of an economy – conventionally measured in GDP – roughly corresponds to the number of hours worked multiplied by labour productivity. Therefore, if the GDP of an economy declines due to ecological policies, but labour productivity continues to rise due to technological progress, working hours must be reduced – otherwise the problem of unemployment will worsen massively. 45 Even if it is unclear how labour productivity would develop in a degrowth society, many thinkers have underlined this proposal since the beginning of the growth debates and frequently refer to Keynes, who already in 1930 assumed that in the age of his grandchildren a working week of ten to fifteen hours would be normal and sufficient (see section 3.2).46

According to André Gorz, the radical reduction in working time can be understood as the redistribution of the surplus value that results from increases in productivity from capital to labour – in the form of free time. From a degrowth perspective, however, the extent of possible reductions in working hours has its limits, as labour productivity is very likely to increase more slowly, or even decline, due to the importance of care activities and the elimination of ‘energy slaves’ from fossil fuels. In the case of care activities, including paid care work, increasing productivity is either impossible or would result in a reduction in the quality of work. And in a solar-powered, resource-saving, and partly deindustrialized circular economy with sustainable farming, the demand for human labour would likely increase in some sectors.47 On the other hand, it is argued that certain kinds of digitization may also save time and make local production more efficient, and thus increase production. In addition, because many useless jobs would ideally be regulated and reduced, such as in the advertising industry, there may also be a large transformation of the composition of labour in the economy as a whole. How the volume of working time will develop as a result is thus ultimately an open question that can only be answered empirically. It is possible that a completely different and more comprehensive understanding of the active life or ‘vita activa’ (Hannah Arendt) will emerge in a degrowth society. 48

While some authors advocate a reduction in working hours without wage compensation, where the loss of wages would be compensated for by more self-work such as repairing goods, self-production, or vegetable cultivation,49 a just degrowth approach stresses the need to combine the reduction of working hours with either an equalization of wages, increases in wages for low-income groups, or compensation of income loss with other forms of monetary and non-monetary social welfare. For example, while generally reducing working hours – the New Economics Foundation estimated that twenty-one hours per week would be enough – wages in the lower third of the income bracket could be raised to the average, while wages in upper income groups could be continually reduced.50 Another proposal is work-sharing, where multiple people would be hired for the same position, working only two or three hours a day while keeping the same benefits. This is seen as a transitional policy that would allow people to shift to working fewer total hours while employment levels stay the same or increase.51 In addition to the equitable redistribution of work, particularly in terms of gender, a central goal of shortening working hours is the achievement of ‘time prosperity’ and the expansion of free time, which can be used for activities beyond the market economy, for political selfdetermination, care, or for the hedonic enjoyment of a more relaxed existence beyond the treadmill of the ‘work and spend’ economy (see section 4.1).52

Degrowth does not aim at dispensing with work altogether. While stressing the shortening of working hours, degrowth also aims to revalue care activities and to defend and strengthen non-alienated, socially meaningful, self-determined, and dignified work as a central component of human life. The re-skilling of artisanal capabilities in many aspects of economic life, with all the social and ecological benefits this brings, is thus a core issue of degrowth.53 Here, as noted by Kate Soper, it is important to not fall for ‘a sentimental nostalgia for earlier craft-based modes of producing’, which often defined traditional roles and ‘encrusted’ parochial social hierarchies, but to reclaim artisanal, slow, and fulfilling ways of working ‘as a component of an avant-garde, post-consumerist political imaginary’.54 So, while embracing automation where it frees humanity from dull, dangerous, and unattractive work, degrowth also focuses on making the heteronomous and care work that remains – and this will be quite a bit – as intrinsically pleasurable and self-determined as possible.55

While some degrowth texts argue for the ‘right to laziness’, as Paul Lafargue had put it already in 1880, feminist authors point to the sexist implications such a perspective often entails: not only does ‘part-time work for all’ already represent the current normal situation for many women, but such a policy would also free up the necessary time to make a genderequitable division of (domestic) care work easier to achieve.56 There is, however, controversy as to how care work should be carried out in a degrowth society. Some proposed ideas include offering remuneration for care work within the (nuclear) family, distributed gender-equitably; or, instead, rethinking care work collectively, especially in the context of local communities; the idea of a ‘care municipalism’ as a communal and publicly understood task that also supports household work; as well as proposals to expand care work as a better paid and recognized professional occupation, to grow the care sector as we switch from a fossil fuel–based industrialized society to a decarbonized society based on human services.57

Already very early on in the debate, in the beginning of the 1980s, André Gorz saw the many who are indifferent to work as a possible political subject of change – in contrast to the ‘class of the regularly working’, whom he saw as preservers of the old order. Gorz thus identified as areas of struggle not only the division of labour and the general shortening of working hours, but also the abolition of wage dependency through more artisanal forms of non-alienated production and a basic income guaranteed to all.58 All these policies continue to be central to the creation of the ‘plenitude’ of a degrowth society. 59

5.5. Democratizing social metabolism

Degrowth also centres the politicization of social metabolism and its repercussions for policy design – and thus democratizes the process of growth. In the capitalist market economy, there is a tendency for that which generates the greatest profits to be prioritized and thus grow, which in turn makes relationships between production and consumption highly irrational, inefficient, exploitative, and oppressive. A degrowth transformation in turn means that the ‘creative destruction’ (per Joseph Schumpeter) and related expansion – or, to put it differently, the phasing out and simultaneous expansion of different sectors, technologies, resource-uses, or economic activities – would no longer be left to the market, competition, and prices. Rather, the social-ecological transformation of society demands that these questions are democratically and politically deliberated at regional, national, and global levels. The central demand is to repoliticize and democratize social metabolism. This also includes a democratic deliberation of what strategies for meeting needs are compatible with the demands of social justice, self-determination, and a good life for all – a discussion that can only really be made possible by eliminating anxieties around poverty and deprivation through the provision of universal basic services to all (see above). And this includes the democratic establishment of limits, within which human well-being can flourish – collective self-limitations being a hallmark of autonomy, a ‘social choice, not … an external imperative for environmental or other reasons’.60

While the flourishing of some economic activities and the qualitative transformation or contraction of others certainly involves selective growth, the overall result will not be an increase in the size of the economy (even if measured in GDP).61 This is because the aim is a fundamental socioecological transformation. In fact, many of the degrowth policies such as work-time reductions, centring care, conservation of nature, or curtailing accumulation will slow down GDP. But most importantly, the non-profit, regionalized, collaborative, sustainable, and solidarity economies and the commons that are continuously strengthened in the transition to degrowth tend to not only be less energy- and material-intensive, but also contribute much less (or not at all) to GDP. The provision of basic services for all (health care, food, clean water, housing, energy, free movement) would enable a kind of ‘public abundance’, where the material basis of life is freely given. Yet guaranteeing these services for all collectively and publicly or as commons, rather than individualized and via the market, would decrease material throughput, as it would reduce inefficiency, overproduction, and the private consumption of goods. For example, a functioning public transport system would make private electric cars in cities largely superfluous; food waste (currently responsible for 6 per cent of emissions globally, according to one study62) could be minimized radically; instead of everyone buying a washing machine, people would be able to share them; tools would be freely available in a tool lending library; and repair cafés where you learn to repair your electronics, clothes, and furniture would be widely accessible.63 Beyond basic services, municipalities and governments could also support infrastructure that offers people a fulfilling life: playgrounds, open areas, investment in arts and culture, and local citizens’ assemblies that guide political decisions. Thus, while a degrowth society would seek to meet people’s basic needs with a much smaller material and energy throughput, and without relying on GDP growth, this way of post-growth living would also be more fulfilling overall, creating avenues for an ‘alternative hedonism’.64

However, degrowth does not only promote an ecological and needsbased alternative economy, as other proposals for ecological change often do, but also focuses on the need to actively phase out the globalized, profitoriented, fossil fuel–based industrial economic sectors and activities that do not serve the common good and cannot be sustainably or democratically restructured. Social activity that is not fulfilling and does not advance human well-being, such as ‘bullshit’ and ‘batshit’ jobs, the arms industry and the military, advertising, lobbying, planned obsolescence, fast fashion, border security, and large parts of the financial industry, will have to be scaled down. The same goes for any economic activity that cannot be restructured socio-ecologically, such as the coal and oil and gas industries, motorized individual transport (above all in cities), or large parts of air transport and globalized trade, as well as industrial agriculture and industrial animal farming.65

Instead of relying on the market and hoping that green alternatives will eventually outcompete these harmful activities, degrowth proposes a wide range of political measures that aim at actively curbing and downscaling them. These include policies such as caps on resource use, moratoria, ecological tax reform, just transitions, or confrontations with private ownership structures that impede the fast scaling down of fossil resources, and they will have to result in processes of deaccumulation. An essential measure would be to set global and national ceilings for the extraction of resources, emissions, and land use, which – when broken down to specific regions – take the historical ecological and climate debt of the early industrialized countries into account and adjust for the consumption of resources, energy, and land hidden in imported goods as ‘ecological rucksacks’.66 With regard to climate change, the single most effective policy intervention is probably also one of the most simple ones, but has been conspicuously avoided by governments around the world: to cap fossil fuel extraction – in line with the core demand of the climate justice movement from the Global South, ‘Leave coal in the hole, oil in the soil, and gas under the grass.’67 The aim is to rapidly scale down fossil fuel use on a fair and binding schedule to the point where the industry is largely dismantled – globally by 2050 at the latest, and in rich countries, which are responsible for the largest share of (historical) emissions, already by around 2030. Absolute caps are not only highly effective, avoiding the fallacies of empty promises and other false solutions around dubious ‘net zero’ targets and negative emissions, but have other beneficial effects. Rather than increasing productivity and efficiency gains resulting in rebound effects, technological development could translate into actually lowering resource use and emissions if caps are in place.68 However, given the speed and scale of the necessary emission reductions in rich countries – which amount to effectively cutting fossil fuel use by around 10 per cent every single year – efficiency improvements and investment in renewable energy will not be enough. Wealthy countries will have to create economies relying on less energy – and this requires fundamental changes to the entire economy along the lines of degrowth policies.69

To achieve such fundamental changes, from a degrowth perspective the excess consumption by the rich might be a good starting point – it is absurd to permit SUVs, private jets, or private space travel amid a climate emergency. Other proposals along these lines are the moratoria on newly planned carbon- and resource-intensive megaprojects or infrastructures (airports, mining, motorways, hydro-power dams, mega-malls, corporate industrial plants and warehouses, industrialized agriculture and animal farming, IT monopolies such as new infrastructure dedicated for Amazon and Google servers, and so on), but also on all non-renewable construction activities as a whole.70 Furthermore, ecological tax reform could support the contraction of fossil-resource use by shifting taxes from labour (i.e., income) to energy and resource consumption or to environmentally harmful activities more generally. 71 For example, a gradual replacement of income tax with CO2 or resource taxes could incentivize the transition from environmentally harmful to more environmentally friendly consumption and at the same time encourage development of sustainable companies and cooperatives.72 However, since low-income households spend a larger portion of their income on consumption, ecological taxes should be combined with redistributive measures so that they do not place a greater burden on the poor. The revenues from ecological taxes could be paid out in equal parts to all, as discussed above. Alternatively, they could be used to finance social infrastructure or to provide tax relief for lower-income groups.73

‘Just transitions’ will be necessary for the people and regions currently employed in sectors that need to transition. Where possible, industries could be converted so that, for example, trams, heat pumps, or bicycles are produced in former car factories – a question that is obviously highly complicated and demands a considerable degree of economic planning and bottom-up deliberative processes. For those who lose their previous sources of income through the dismantling of certain sectors – such as the withdrawal from coal or the liquidation of parts of the car industry – and are forced to make significant changes, social security and retraining are just as central. Regional transformation councils composed of workers, citizens, and civil society organizations could be set up to transform entire economic sectors in those regions most affected by the transition. In these processes, those employed in the (formerly) carbon-intensive industries could become key actors of the transition, not only as political stakeholders and potential allies of climate justice movements, but also through public takeovers of companies. As has been argued recently: ‘Seizing control of workplaces would be necessary to repurpose them to make what we actually need and move away from ecologically destructive production.’74

These policies also imply the need to address the central question of ownership. The industries that cannot be converted into a low-carbon, energy-efficient, solidarity-based economy of the future account for a very large share of the global economy. To limit the overheating of the earth, for example, we cannot wait until all destructive investments have been written off, because the payback periods for mining, airports, and incineration plants are decades. So, if certain sectors are to be phased out in a relatively short period of time, this would require the loss of capital already invested in unsustainable infrastructure. In other words, we simply cannot afford to wait – capital investments must be destroyed now rather than slowly divested. For example, multinational companies own much of the oil and coal reserves that remain in the ground but that cannot be extracted if we are to limit the risks of runaway climate change (so-called ‘unburnable coal’). Degrowth thus faces the challenge that certain industries must be expropriated and transferred to common ownership in order not to stand in the way of socio-ecological change.75 The political and geo-political consequences of this cannot be neglected. A degrowth transformation will therefore not be a smooth passage, but undoubtedly require confrontations with fossil capital and those who benefit from existing economic structures (see chapter 6).

5.6. International solidarity

‘Degrowth in the wealthier world, which would reduce its material impact on the remainder of the planet, is the most effective internationalism, leaving more space for others to live’; so goes the succinct summary of a widely held view within the degrowth spectrum, as described by Max Ajl. By attempting to overcome the imperial mode of living, which is based on the neocolonial appropriation of Global South resources and the externalization of its costs of living to others, degrowth – ‘a corrective prescription for the Global North’ – is putting its own house in order, the reasoning goes.76 And yes, as we have argued by framing degrowth as an ecological global justice movement, degrowth is in this sense internationalist. However, as Ajl continues, ‘there is a thin line between modesty and myopia, an inwards-looking ostrich syndrome, in a country marked by imperial modes of living.’ Instead of confronting the complexities and conflicts of international solidarity, there might be the danger that degrowth becomes a self-sufficient but also self-centered movement of localists that would ‘silence demands for climate reparations’.77 Further, the common argument that degrowth is a movement only ‘for the North’ misses an opportunity to, first, challenge the undisputably global desire for an imperial mode of living, and second, challenge the growth imperatives imposed on the Global South through, for example, structural adjustment, odious debt, or sanctions of countries that seek another path to development.

This highlights the need not only to address issues of international social-ecological justice conceptually, but also to build active alliances with actors in and from the Global South, ranging from movements within the pluriverse of ‘alternatives to development’ to support for environmental justice struggles to solidarity with communities fighting for reparations and to refugees and migrants arguing: ‘We are here because you destroy our countries.’78 If, as we have argued, degrowth is at its core about global ecological justice, international solidarity is central to the degrowth agenda. And this includes not only policies of debt cancellation, support for territorially rooted struggles in the Global South, a strong commitment to ecological reparations and transfers of financial resources, renewable technology and knowledge (including patent waivers), as well as strengthening Indigenous land rights. This also includes the broader constructive programme of reparations as ‘worldmaking’ to create the conditions for a truly just world.79

International solidarity also involves protection of wilderness and the saving of land from enclosure. However, care must be taken when considering different radical proposals for conservation, many of which often rest on colonial assumptions. For example, within degrowth and among its allies, there is strong criticism of global proposals such as that of ‘Half-Earth’, first proposed by biologist E. O. Wilson and increasingly taken up by conservation and development groups. Half-Earth proposes to leave half of Earth’s surface for nature and bereft of human settlement, thereby exacerbating highly colonial processes of dispossession of Indigenous people from their land. Indigenous people, it must be noted, are stewards of up to 65 per cent of the world’s landmass – though only 18 per cent of which is formally recognized as theirs.80 Indeed, Indigenous land stewardship has been shown to be better at limiting carbon emissions and ecological degradation than most policies.81 Further, such proposals, and similar conservation initiatives, operate through the colonial imaginary of separation between humans and nature, while degrowth largely advocates for inter-dependence between humans and non-human life forms, and decolonizing our relationship to nature. It is not humanity as a whole that is the problem – much less the world’s poor living in ecologically fragile areas – but the affluent world driving the majority of extraction, production, and consumption. In terms of policy, alternatives to colonialist conservation proposals include supporting Indigenous peoples in their efforts to steward the land, advocating for land reform and the protection of peasant livelihoods globally, transforming industrial agriculture and production so that it does not rely on as much extraction and production, thereby stopping land degradation globally, and putting a stop to speculative, neo-colonial land grabs – whether carried out by private or public investment firms or conservation NGOs.82

One further issue with degrowth policies is that the economies of industrialized countries must not only be redesigned to be more socioecologically just, the effects of such policies on people in the Global South must also be accounted for. For example, a shift towards unconditional basic services, as well as ecological taxation and a localization of needsoriented production, will likely lead to less consumption overall, less reliance on resource extraction from the Global South, but could possibly also heavily damage the economies of the Global South that rely on exporting resources and consumer goods, or on tourism, as was evidenced by the effects of the COVID-19 lockdown.83

Policies will need to be put in place to address this – not only through supporting the Global South in switching from its dependency on unequal exchange and globalized markets, but also to ensure that degrowth policies do actually lead to greater global justice through a sharing of resources, knowledge, technology, and cooperation as well as through preferential trade arrangements and reparations. Essentially, most non-industrialized countries simply cannot offer basic income or basic services because they cannot borrow money as freely as industrialized countries, and they are already subject to structural adjustment policies imposed by international lending organizations. Addressing this could involve restructuring global finance to democratize uneven economic relationships between the North and South. Of course, this would also require dismantling the ongoing colonialism of industrialized countries practised through, for example, land grabbing and extractivism (increasingly also ‘green extractivism’), as well as ending military imperialism by the West.84

Global trade and the international economic system itself would also eventually have to be entirely transformed. The restructuring of the economy along the lines proposed by degrowth implies a ‘deglobalization’ of economic relations or, as has recently been argued by Utsa and Prabhat Patnaik, a ‘de-linking’ of the Global South from neoliberal globalization and the exploitative trade and financial system dominated by the North.85 The aim is to limit trade in goods and services that are problematic in ecological and human rights terms, largely driven by corporations taking advantage of international wage and price differentials, and often not necessary at all. While degrowth also aims to restrict the international movement of capital – a policy that could play a key role in the transition phase to stabilize international markets – it pursues the expansion of trade that is beneficial (in particular to the Global South), cultural exchange and slow travel, and the freedom of movement of people. It is therefore a matter of regionally anchored but interconnected and open economic relationships and a much more localized production.86 Degrowth, accordingly, does not stand for cultural and nationalist isolationism, homogeneous bioregions, or competition-based economic protectionism, but for ‘open localism’.87 There is also the proposal to ‘Design global, produce local’, which is made increasingly possible through digital means of communication in combination with digitally controlled production. For example, open-source sharing of designs, building plans, and instructions for the production of goods enables localized production based on a global ‘digital commons’.88 At the global level, the aim is to avoid unnecessary transport and environmental costs through regionalization and to reduce regions’ dependencies on the world market.

A key part of international solidarity would be the rewiring of international relations. Municipalities (including rural towns) and cities are envisioned as key actors of change – ‘rebel cities’ or ‘solidarity cities’ would link up and work together to put forward new international alliances – a vision often labelled ‘radical municipalism’.89 This scale of politics is considered to be ideal for degrowth as it is in the municipality that people can practise face-to-face political deliberation.90 In addition to a global environmental and climate justice policy, a major goal is to establish a fair world trade system through radical institutional reforms that would benefit peripheral regions. Possible measures mentioned in this context include global taxes on finance and capital, the creation of a democratic international monetary system (such as the one based on the international currency ‘bancor’ originally proposed by Keynes), equitable market access for public-interest companies, reforming or abolishing international organizations like the World Bank and the International Monetary Fund, and democratically negotiated financial and technological transfers to offset climate debt, the consequences of colonialism, and other negative consequences of capitalist modernity. 91

5.7. Why degrowth is viable

This variety of proposals for the economy, social services, technology, work, and international solidarity aim to underpin a degrowth society with more concrete political visions. Even if these are incomplete and in a state of flux and must be further developed and experimented with – according to the Zapatista motto preguntando caminamos, or ‘asking, we walk’ – they are central for turning degrowth into a ‘concrete utopia’. Following Erik Olin Wright, these policies indicate that degrowth is not only desirable, but also viable – meaning that a degrowth society could actually work. Some questions, however, still remain unanswered: Is it achievable? Who is in a position to carry out and implement these fundamental societal transformations, under what conditions, and through which alliances? The question of transformation is discussed in the next chapter.

6 Making degrowth real

As we hope has now been established, degrowth both represents a multilayered critique of growth and points to pathways beyond it. In the previous two chapters, we defined degrowth and outlined some policies that could take us there. But this still does not tell us how we can make degrowth happen: in Erik Olin Wright’s terms, is it achievable? How would we align social movements, technological change, the economy, and our political systems? Who would make it happen?

This question is extremely difficult because the scale of the challenge is, to put it humbly, substantial. Since modern societies are fundamentally designed to expand and grow, transformation encompasses not only material but also economic, social, and mental changes – a ‘prosperous way down’ requires entirely new forms relating to each other, or a ‘relational revolution’.1 Such a transformation is comparable to world-system historical transitions such as the rise of capitalism or the advent of fossil fuel–powered industrialization. History shows that changes of this magnitude take place in complex processes that overlap in time and space. These processes encompass political, social, ecological, and cultural dynamics and each have different temporalities. Some would emerge as crises in which the old order dies away while a new one emerges, others as processes of adaptation and innovation that realign the old system, and yet others as consciously manifested struggles for a new society. From a historical point of view, profound social transformations have always been marked by fierce controversies, public disputes, and, up to now, (violent) conflicts. Escalation of conflict is all the more likely when the changes proposed directly oppose the interests of the powerful.2 Furthermore, this transformation must emerge out of conditions of a form of capitalism that has never been as all-encompassing and global as it is today – and on a dying planet, amid accelerating climate crises and mass extinction. As aptly put by the Salvage Collective, the traditional saying ‘Workers of the world unite, you have nothing to lose but your chains. You have a world to win’ seems to be out of touch with the biophysical reality of the planet. ‘What if the world is already lost?’3

Degrowth is a vision of social transformation that has never been realized: a conscious, radically democratic process of transforming society to create the conditions for a good life for all, by pulling the emergency brake and stepping out of the capitalist and growth-driven megamachine. Given this immense scale of the challenge, the discussion about the degrowth transformation is only in its infancy. Before we begin to discuss it, we need to acknowledge a tension that often seems to underlie this discussion. On the one hand, degrowth is often proposed as a platform of relatively concrete top-down policy proposals, such as shortening working hours, establishing basic and maximum incomes, or setting upper limits on resource consumption. Even if there are ways that this ‘revolutionary realpolitik’ can be carried out by organizations or municipalities, the idea is that these reforms should ultimately be implemented ‘from above’ by the state, or fought for through the state by social movements and parties. On the other hand, however, degrowth is just as equally characterized by a strong focus on bottom-up, small-scale alternatives and self-organized projects that function without or even against the state. Even if state policies can support their spread, these nowtopias tend to be projects ‘from below’. And this is unique to degrowth, compared to other leftist orientations: a strong emphasis on desire-based, visionary, on-the-ground experimentation and organizing. Yet, despite the way this tension sits at the centre of the degrowth project, there have not been many proposals for how to connect these different approaches.4 This tension – between bottom-up small-scale practices and top-down concrete policy proposals – is the starting point for our own proposal for how we can approach the transformation towards a degrowth society. Because, as has been noted before, the degrowth transformation cannot work without properly understanding, and building, those social forces and counter-hegemonic struggles that could accomplish the radical economic reforms discussed in the last chapter – and this requires actively relating bottom-up nowtopias and top-down policies.5

In order to better describe this strategy, we here build on some more ideas from the sociologist Erik Olin Wright, who has offered reflections on how to resolve these tensions in a unified vision.6 Wright coined the term ‘real utopias’ to describe the emancipatory strategies that start within capitalism but are designed to overcome it. He distinguishes between three transformation strategies that are not mutually exclusive. Interstitial strategies – really-existing alternative institutions like cooperatives or community-based organizations – allow people to test changes to institutions, infrastructures, or forms of social organization in the cracks of capitalism. Through a process of metamorphosis, cumulative efforts can then bring about qualitative changes to the central dynamics and logics of the hegemonic system. Symbiotic strategies aim at setting up forms of cooperation between different social forces, in order to achieve concrete reforms and improvements that can eventually change the social system in the long term – this is then normally done through traditional political systems. Finally, Wright talks about ruptural strategies, which involve mass movements attempting to overcome the dominant social system through revolutionary confrontation and taking down or taking over the state. While a strategy of large-scale rupture (‘revolution’) is rarely discussed in the context of degrowth, interstitial and symbiotic strategies are often discussed, though regularly juxtaposed to each other.

In this chapter, we claim that top-down and bottom-up degrowth strategies, despite their apparent opposition, rely on each other to be successful. Top-down reforms allow the expansion and scaling up of nowtopias, while, without nowtopias, people will remain unable to imagine how radical reforms could improve their lives and thus desire and fight for their implementation. For example, the more reforms implemented to support cooperatives, the greater the number of people who will work in them. And, the more people work in cooperatives, the greater the pressure for conditions that allow cooperatives to flourish and the greater the desire for non-exploitative workplace democracy – in turn expanding the kinds of reforms that are seen as politically feasible. The two are linked through the state as an intermediary vehicle for the large-scale transformations needed. Yet, we also need ruptural strategies: organized resistance that builds up pressure for radical transformation and that eventually radically democratizes and appropriates the state at all levels. Thus, rather than putting these strategies in opposition to each other, we propose, following Wright, that the transformation towards a degrowth society requires an interplay among these three strategies, which in turn includes the construction of a counter-hegemony to the dominance of growth.

6.1. Nowtopias: Autonomous spaces and laboratories for the good life

In Catalonia, Spain, a cooperative of 2,500 members runs exchange networks, its own currency, food pantries, assemblies, financial cooperatives, a collectively-run factory, a machine working shop, and supports around forty-five people with a basic income. The Catalan Integral Cooperative, founded in 2010, is an amorphous network whose main mission is to ‘antagonise Capital by building cooperative structures in the Catalan economy’.7

Since its foundation, it has developed several diverse, but interdependent, initiatives which have as their explicit goal to displace the state apparatus – covering health, food, education, housing, and transport. The cooperative has become an encompassing network that allows many to move much of their life outside of the dominant economic system. This involves, for example, participating in one of the many committees which decide the direction (legal, financial, technological, and so on) of the network. Involvement in the work of the committee also implies receiving a basic income, partly in euros and partly in their own currency system. There is also a well-developed local exchange network, which supports autonomous, small-scale production as well as ‘pantries’ which are connected through an internal transportation and logistics system. The cooperative also includes many autonomous organizations, such as events spaces, cooperative housing units, and the impressive Calafou – a ‘postcapitalist ecoindustrial colony’ in the ruins of an abandoned industrial village in the Catalonian countryside. In 2017, Calafou was inhabited by two dozen people and, on top of that, housed a carpentry and mechanical workshop, a community kitchen, a biolab, a hack lab, a soap production facility, a music studio, a guest-house, a social centre, and a ‘free shop’ – each run collectively and non-hierarchically. By itself, Calafou is certainly unique. But what makes it so special is its connection to an expanding ecosystem of other similar projects through the cooperative and its many members.

This innovative project is emblematic of what Wright calls an ‘interstitial strategy’, as it allows its members to experiment with different ways of organizing housing, food supply, technology, currencies, and the revaluation of labour – away from an exploitative, alienating system towards one that is needs-oriented and meaning-making.

Interstitial strategies, such as this cooperative, seek to experiment with new institutions, infrastructures, or forms of organization. They are laboratories in which new social practices are intentionally developed, tried out, and practised. They emerge within and despite the old system and prefigure post-capitalist relations on a small scale.

Interstitial strategies are particularly present in the discussion on degrowth. Reference is often made to them in order to show that the principles of a degrowth society are already being implemented on a small scale today. Degrowth has thus contributed in recent years to advancing the visibility and politicization of a new wave of ‘prefigurative’ social movements – that is, experiments which prefigure the world we want to see, today. And degrowth has also fostered the development of policy proposals that could create conditions for the flourishing of these interstitial strategies – starting from legislative changes (as discussed in the last chapter) to collective networking efforts to advancing what have been called ‘commons public partnerships’.8

Temporary interstitial practices such as the degrowth summer schools or climate camps or other political camps around the world offer people an experience of a communal, self-determined, and sufficient lifestyle through collective self-organization, shared care work, and the use of exclusively renewable energies and compost toilets. More permanent interstitial spaces tend to supply infrastructure suitable for degrowth for a certain social realm – be it energy supply, food cultivation, childcare, production, or services. Many of these ‘nowtopias’ exhibit a certain interpretative flexibility and are often mentioned in discussions about commons, solidarity economies, or the ‘the economy for the common good’ – as examples of autonomous spaces in which the core principles of a different society are already lived.9 Examples often cited in this ‘mosaic of alternatives’10 are collective enterprises, community-supported agriculture, alternative media, urban gardens, childcare and alternative schooling, collective kitchens and food recuperation, housing projects and squats, occupations, municipal energy projects, time banks or regional currencies, repair cafés or open-source hardware.11 In addition to these projects, which usually only cover a specific area of the participants’ lives, there are also larger projects in which these various areas are integrated. These more complex practices can be found in many eco-villages or in ‘integral cooperatives’ such as the Catalan Integral Cooperative discussed above.12 There are also individual practices that can be included in the nowtopian strategy of creating interstitial space, which help people to create free space in their own life. These include greatly reducing one’s working time, learning manual and horticultural skills, veganism, and practising food sovereignty. 13 Broader lifestyle changes are also important, such as ‘voluntary simplicity’, or practising a simpler, more fulfilling lifestyle and limiting consumption.14 Strategically, these individual practices are formulated as positive models rather than as appeals for self-sacrifice and renunciation. Here, we can also speak about practices of ‘time prosperity’, which highlight the flourishing of free time and leisure as an underlying goal of the good life (see section 5.5).15

Many activists in the degrowth movement are engaged with one or more of these practices and are involved in collective nowtopias. While these are often discussed through the lens of individual renunciation and selfsacrifice when degrowth is reported on in the mainstream media, many of these projects are fundamentally oriented towards needs, based on a postscarcity logic, and strive for collective organizing and large-scale political change.16

What clearly distinguishes nowtopias, however, is how they understand what constitutes political activity. There are more politically oriented and less politically oriented variations of these interstitial spaces. For example, while ‘transition towns’ and ecovillages are often framed in terms of setting the ground for a new system and illustrating new forms of well-being, and often push for changes to municipal policies, they are not often articulated in terms of a challenge to capital or the state. Other interstitial projects are far more radical and are thus also often referenced in the degrowth discussion. Examples of these include the Zone à Défendre in Notre-Damedes-Landes, France, where activists and farmers had long occupied a site for a future airport; Rojava in northern Syria, where a majority Kurdish revolutionary struggle has set up its own government system without centralized state structures and based on women’s liberation; and the Zapatistas in Chiapas, Mexico, who, starting with a takeover of some villages, have organized their own non-state, decolonial system based on Indigenous and anti-capitalist values. These more revolutionary nowtopias can be seen as ‘territories in resistance’ which actively seek to model new forms of democratic government that are in opposition to a growth-based, highly centralized, hierarchical, and unecological social structure.17

Developing interstitial spaces is theoretically justified in different ways. Some thinkers – above all from the sufficiency-oriented current (see section 4.1) – stress that electoral, state-sanctioned politics cannot alone address ecological crises and that majorities cannot be won for degrowth policies. Therefore, the only possible course of action is the development of autonomous experiments that test and exemplify resilient self-sufficiency. 18

Others consider this perspective too fatalistic. They see interstitial spaces as real laboratories, prefigurative projects, or spaces of possibility in which exemplary forms of organization are tried out, which then inspire others and radiate to society as a whole, thus bringing about structural change.19 For example, the Catalan Integral Cooperative shows that it is feasible to build an alternative, solidarity-based system of credit; community-supported agriculture proves that food can be ecologically and socially responsible; and energy cooperatives prove that an energy revolution can be realized from below. What’s more, at a global level, cooperatives are not a small phenomenon – in all their variety, there are around three million cooperatives in the world, in which more than 12 per cent of humanity is engaged and which provide jobs to 10 per cent of the employed population.20

Another line of reasoning, specific to the degrowth discussion, draws from – often without saying so explicitly – feminist theories that regard self-transformation as closely linked to social transformation. As is said, ‘The personal is political.’ Thus, philosopher Barbara Muraca writes:

In these protected spaces we can question critically how conceptions of the good life and perceptions of needs came about. Moreover, we can uncover the extent to which they are merely an immediate expression of established values that have been imposed on individuals in the interest of preserving and reproducing prevailing social relations. After all, an important function of concrete utopias is the ‘education of desire’, as it is termed in utopian studies, or learning collectively about our desires and needs. In the alternative spaces of experience established through social experiments, one can learn to desire differently, better, and even more. Instead of repressing desire through a one-sided notion of voluntary simplicity, the point is rather to free oneself from the forces that limit the autonomy to demand more (in political terms). Social experiments teach us autonomy as a collective project.21

Self-transformation – with the goal of fostering ‘degrowth subjectivities’ – can be seen as a starting point for social transfor mation.22 Degrowth can thus also be understood as a form of reflection on the privileges produced through the imperial mode of living, which must be dismantled both in our everyday practices and politically.

While there is a widely shared consensus within the degrowth discussion that interstitial strategies must be part of a degrowth transformation, their significance, function, and concrete forms are controversial. Some argue that these alone are not sufficient, since small initiatives do not, in themselves, foster the creation of a counter-hegemony, or construct added up to form a different macroeconomic system.23 Instead of presenting real alternatives to growth, prefigurative spaces run the risk of becoming a ‘relic in the town museum’, failing to bring about transformative change and offering only to keep capitalism and neoliberalism afloat.24 Indeed, without a broader counter-hegemonic framework, they could increase its resilience and even help to stabilize it. For example, if neighbours or relatives start to focus on mutual aid in place of the state, the state will be enabled to give up responsibility for supporting people with a safety net. Moreover, there is a danger that the emphasis on local communities over nation-state solutions fails to recognize that these communities can be highly exclusive and extremely non-egalitarian, that they are often based on self-exploitation and that not everyone can participate in them, and that traditional commons were often embedded in feudal power relations, patriarchal structures, and personal dependencies.25

Interstitial spaces are a central part of the transformation towards a degrowth society. However, they should not be exclusive but must be designed openly, collectively, and democratically, they must (self-)critically reflect on and dismantle all forms of discrimination, and they must be accompanied by radical institutional changes throughout society. 26 It is here that more radical examples of interstitial spaces, such as that of Rojava and Chiapas, can help orient us to consider how a wholly different economic and political system can be constructed, and how this can operate in resistance to the domination of capital.

6.2. Non-reformist reforms: Changing institutions and policies

Imagine how different life could be if we had not five days of work per week but three. We would have time to see family and friends, take care of our children and the elderly, cook meals for ourselves ahead of time instead of buying takeout, garden, and, perhaps, join more protests and organize with our neighbours and co-workers. Or, imagine if housing were no longer a form of investment or speculation but actually guaranteed to everyone, and no one was at risk of having to live on the street if they could no longer pay the rent increases. Or imagine living in cities with an abundance of well-functioning, reliable, and luxurious public resources to which everyone would have free access and could use collectively – from public transport (on streets freed from private cars) to fast internet connections and community cinemas.27

In addition to expanding post-capitalist nowtopias from below, degrowth has a strategic focus on the development of proposals for degrowth policies and institutions. This gradual change of laws, norms, infrastructures, and institutions, starting from and building on today’s structures, can be understood as a symbiotic transformation strategy. As argued in chapter 5, these ‘non-reformist reforms’ do indeed start with existing structures and regulations but point beyond the capitalist, growthoriented mode of production. The most important of these proposals – such as the reduction of working hours, radical policies of redistribution, universal basic services, ecological tax reform, or income maximums – have already been discussed in the previous sections. They are at the centre of the debate on degrowth, since only through a ‘revolutionary realpolitik’ can the goals of transformation towards a degrowth society be achieved. Here we briefly review the fundamental importance of such policies, and how they may realign society and work together with other strategies.

First, these proposals are central to the degrowth strategy because interstitial strategies only have a chance of initiating far-reaching social change if they are accompanied by political changes: ‘If the delicate beginnings of the transformation to a degrowth society are to be given a chance of generalization and expansion into other social and economic areas, a mutual fertilization between micro-practices and macro-politics is necessary.’28 Degrowth policies thus foster and strengthen grass-roots experiments, in turn ensuring that the scope of these autonomous economic practices expands and that they become commonly practised, rather than exclusive to some. This is needed because such experiments constantly face structural limits: lack of resources, land, and property, competitive conditions that reward ecological and social exploitation, lack of time, inequality in society.

Thus, the phaseout of the fossil fuel–, profit-, and stock market– driven sectors – as well as the increased fiscal and legal support of regional, sustainable, and cooperative forms of economic activity – helps to multiply democratic and collaborative nowtopias. An (ecological) basic income or the expansion of municipal public services gives people the space and support they need to get involved in political discussions – beyond the fear and anxiety of capitalist work society – about how to transform society, which needs are legitimate, which areas of society should grow, and which should be phased out.29 In combination with a reduction in working hours for all, these would also promote the development of a mode of living based on solidarity, in which the overarching importance of wage work is reduced, care work is revalued, gender relations become egalitarian, and in which everyone has time to collectively shape an increasing part of their lives and economies outside the market. In addition, a radical redistribution of wealth and income creates real opportunities for participation – for example, through a reform of tax and inheritance law and through the socialization and decentralized redistribution of the means of production such as the ownership of land and buildings, technology, and knowledge. This makes it possible for all people, in a society that is much more egalitarian and structured around public abundance rather than privatized wealth, to make equal use of the opportunities for self-development and participation, in turn deepening the democratization of politics and the economy, undoing the alienation that divides us from our environment and each other. 30

Non-reformist degrowth policies, however, are not only central to promoting the generalization of a cooperative economy. They are also important in order to overcome the dependence by current institutions and infrastructures on growth and to achieve a mode of production and living based on solidarity at the level of society as a whole. As already discussed above, the vision of a degrowth society can only emerge in the interplay of various radical reforms: a stable and growth-independent society that strengthens social justice, democracy, and self-determination, and does so with a much lower material metabolism. According to Giorgos Kallis, if these reforms were implemented, they

would require the very contours of the system to change radically to accommodate them. And reforms that, simple and common-sensical as they are, expose the irrationality of a system that makes them seem impossible and yet deems possible what in all likelihood will end in catastrophe.31

While these radical reforms may indeed be necessary, there is controversy over the role of the state in bringing about real, needed change. On the left, both anarchists and socialists argue for the need to democratize society, decentralize the state, and put power in the hands of the people – however, they often differ on the means to get there. Many socialists argue for taking over the state first, before letting it wither away, while anarchists argue the needed changes are impossible without the dissolution of the state. Relying on the state may seem expedient at first in order to bring about macro-level changes, but this has its limitation in that the state itself reproduces hierarchy, power structures, and violence. Nevertheless, the scale of action needed requires a powerful actor, and the state currently remains the dominant actor on the world stage, being one of the key loci of struggle for climate justice, labour, feminist, and decolonial movements alike.32

Today, we already have some inspiring proposals that model what a package of non-reformist reforms could look like. We have already mentioned, in chapter 4, the ten policy proposals drawn up by Research & Degrowth in 2015. In 2019, US Senators Ed Markey and Alexandria Ocasio-Cortez introduced a resolution for a ‘Green New Deal’, conceived as a ten-year mobilization to bring the US to 100 per cent renewable energy use, including a massive build-out of social services, in some ways along degrowth lines (though with little mention of growth as an issue to overcome, and little discussion of the need to reduce aggregate social metabolism and address unequal North–South relationships). While the motion was defeated in the US Senate, its afterlives continued to inspire progressive movements in the US and globally, as it set in motion renewed discussions on the possibilities of non-reformist reforms when introduced at the level of government. In the same year, experts and scholars, including many degrowth advocates, put together the ‘Green New Deal for Europe’, a proposal that does explicitly mention the need to push towards a postgrowth economy, and offers ways to reduce social metabolism and expand public services and the cooperative economy. Today, different organizations, in great part inspired by the new leftist electoral surge, are proposing a ‘Global Green New Deal’. Visionary platforms such as these, which may not have political currency yet, set the tone of the debate and are becoming an important site of discussion and deliberation about what kind of future we want to build, and the possibility that building it is entirely possible. Particularly valuable for an alliance would be a ‘Green New Deal without Growth’, which would incorporate common proposals – such as public investment for energy transition, industrial policies, the socialization of the energy sector, and the expansion of welfare – but also highlight the need to build growth-independent institutions, to radically reduce throughput, and to avoid environmental problem-shifting and new forms of extractivism in the South.33

Yet, as many have pointed out, these changes can only be implemented by shifting the balance of power in society and convincing people of the need for these demands to be realized.34 And this is extremely difficult: because degrowth policies are less aligned with vested interests than even those proposed in various Green New Deal platforms, there will no doubt be an even greater opposition to them. That is why we need a counterhegemonic strategy, as discussed below. Given the immense uphill struggle we have ahead of us, the time is now to get started.

[PARAGRAPH BREAKS PAUSE]

6.3. Counter-hegemony: Building people power against the growth paradigm In the early morning of 15 August 2015, around 1,500 people in white painter’s suits – among them one of the authors of this book – set off on an unusual journey in the Rhineland in the west of Germany, an area known for its lignite coal mines, the largest source of CO2 in Europe. Some hours later, hundreds of protesters reached their destination: the Garzweiler opencast lignite mine – despite a massive police presence, supported by around 1,000 of the energy companies’ security guards carrying pepper spray and batons. The activists successfully blocked the huge excavators and halted mining that day, sending a message that there should be no more coal mining in Germany. This blockade was the first of many similar and much larger actions of civil disobedience. Ende Gelände, as it was called, meaning ‘here and no further’, is probably the first major action of civil disobedience to take place in close connection with the degrowth movement. Many people with no prior experience of civil disobedience took part in the action. Many had been mobilized through the degrowth summer school, which had taken place at the climate camp the week before the action. The public reactions to the protest action were – at least in part – very positive. Ende Gelände is one of a number of similar actions around the globe – from Indigenous Pacific Islanders blocking coal shipping in Australia, to the Dakota peoples and their allies constructing a camp on their sacred land to block the North Dakota Pipeline, to peasants and landless workers in Brazil blocking and occupying farmland slated for industrial agriculture. Like these actions, which Naomi Klein characterizes with the term ‘blockadia’, Ende Gelände has played a pivotal role in shifting consensus in society so that, by now, large majorities agree that fossil fuels are not necessary and should be phased out. Actions of civil disobedience, often with the wider support of the public, have been vital in shifting hegemonic ideas of what is good and necessary in society. 35 Interstitial strategies that test alternatives in civil society ‘from below’, and the non-reformist reforms that shift the transformation of central contours of the social system ‘from above’, seem to be, at first sight, contradictory, or perhaps unconnected, strategies. They can be related in two ways. On one hand, the wider adoption of nowtopias presupposes changes in society as a whole, and vice versa, as argued above. On the other hand, however, the implementation of radical reforms depends on the establishment of a counter-hegemony in order to enforce ruptures in certain areas of society and around key conflicts – and this counter-hegemony needs nowtopias to grow and gain strength. What is counter-hegemony? Let us briefly revisit the concept of hegemony. As we argued in the second chapter, following Antonio Gramsci, capitalist growth societies not only stabilize themselves through the power of the state and the economic elites. They are also stabilized by the consent and consensus of the governed and subalterns, a consensus which is primarily established in civil society and the media. Thus, hegemony is the system of power and domination that prevails, not just through governments or the market but also through civil society, our way of life, and the ideas that we live by. Particularly central to this is the hegemony of the growth paradigm – the idea that growth is desirable, necessary, and essentially infinite. Any dominant ideology, including the growth paradigm at the core of capitalist ideology, depends on legitimacy and approval.36 This is the hegemonic system we aim to dismantle. But the everyday mind is not uniform, and the promises and visions of a hegemonic imagination always point beyond it. According to Ernst Bloch, they contain a ‘utopian surplus’ – a common sense that a different world is possible – that can be taken up and strengthened.37 Counter-hegemony is the flip side of hegemony. Building up a counter-hegemony that can undo the growth paradigm, re-orient our economy towards well-being, and scale down social metabolism in the interim would, conversely, also reshape our daily lives, our imaginaries, and the way we conduct politics and manage the economy. These counter-hegemonic imaginaries and movements can be strengthened in diverse ways: in nowtopias; in the development of a cooperative and solidarity economy; in what Ernst Bloch calls ‘militant optimism’; in popular education; through engagement with mainstream media; by running radical candidates supported by social movements to push the debate to the left; through aspirational policies that change people’s living conditions; and through a militant ‘dual power’ grounded in, for example, social movements, unions, strike actions, and people’s assemblies – a strategy that we discuss further below. Crucially, counter-hegemonic common sense is embedded in people’s everyday experience and is therefore closely related to the mobilization of social movements and the spread of nowtopias. For one, counter-hegemonic values can be cultivated when people face the cumulative effects of a growth economy, such as cyclical crises, the brutality of elites in defending the status quo, and the destruction of nature. But this is only possible when these experiences of injustice are politicized through organized social movements, contestation, and public debate. Social movements are particularly important because they position themselves against a hegemonic consensus and can be important catalysts for making counterhegemonic positions part of a future consensus, and they help to politicize people who may have been less active in the past. Shifts in everyday understanding also take place in the manifold commons, nowtopias, projects of the solidarity economy, and social and ecological struggles – once again, especially when these are politically linked and understood as answers to the worsening crises of growth.38 As Barbara Muraca argues, concrete utopias and interstitial spaces are central to fostering a counterhegemonic environment, serving as ‘workshops of liberation’. In the words of Giorgos Kallis, alternative economic spaces are not simply localized initiatives, but ‘incubators’ for counter-hegemony: They are incubators, where people perform every day the alternative world they would like to construct, its logic rendered common sense. Alternative commons are new civil society institutions that nurture new common senses. As they expand, they undo the common senses of growth and make ideas that are compatible with degrowth hegemonic, creating the conditions for a social and political force to change political institutions in the same direction.39 Thus, counter-hegemonic ideas, desires, and demands can be strengthened if more and more people interact with and benefit from the solidarity and cooperative economy, if these freedoms are politicized and social movements are formed around them. A ‘militant optimism’ (as Ernst Bloch calls it) drives these strategies forward, makes them visible, and reinforces them.40 In this sense, advancing visionary policies and experimenting with local alternatives form two sides of the same coin – which ought to be brought together discursively in the degrowth framework. This counter-hegemonic narrative can be made visible through interventions in the social sphere – including through developing new media, conferences and seminars, running radically progressive electoral campaigns (even if they do not win), but also including practices in public space such as adbusting (see section 3.2). The formation of think tanks, strategic engagement with mainstream media and pop culture, developing memes, infiltrating the arts, and engaging actively in the ‘war of ideas’ (per Gramsci) through opinion pieces can all create an environment where degrowth ideas advance in the popular consciousness. Another way to encourage the formation of a counter-hegemonic imaginary is through popular education, engaging people in pedagogical experiences that allow them to readjust mental infrastructures, develop an understanding of being part of society and nature, and become politicized. This can be done through workshops, getting involved in nowtopias, organizing with their colleagues or neighbours, or engaging in political action such as Ende Gelände or a strike at their workplace. Each of these experiences may encourage feelings of enjoyment, empowerment, selfacceptance, mindfulness, solidarity, and finding meaning with others – thus fostering immaterial sources of satisfaction that are central to creating a new common sense around the degrowth imaginary. Non-reformist reforms and the development of a counter-hegemonic common sense are also mutually reinforcing. First, a counter-hegemonic common sense is the prerequisite for building the political power to democratically implement non-reformist reforms. While local, grassroots initiatives and direct democracy are often put front and centre in interstitial strategies, it is also true that we do need organized majorities willing to work towards a cooperative society so that non-reformist reforms can be voted for and implemented. A central challenge here is that in many of these interstitial initiatives, and in the degrowth movement itself, those involved are often predominantly academically educated and from privileged social milieus.41 Degrowth concepts can only reach a wider population if they become meaningful by directly relating to everyone’s life, and if they are experienced as the promise of radical abundance rather than as the threat of individual renunciation.42 It is here that municipal-level changes can be crucial in radicalizing the sensibilities of the majority and creating the desire for more change. While national-level reforms may be initially difficult to achieve, people can organize with their neighbours and at the level of the municipality for initiatives that transform daily life. This could include, for example, social and cooperative housing projects, free public transport, rent strikes, demanding a minimum wage, and resistance to neoliberal mega-projects that shift resources from citizens to transnational investors.43 Even at the national level, proposing aspirational, desirable policies can be seen as one way to politicize economic and social issues – they are themselves a kind of advertisement for degrowth. In this way, social- ecological tax reform, a basic and maximum income, the reduction in working hours, and other complementary measures offer new forms of freedom, well-being, and abundance that can help build the collective selfempowerment needed to further develop counter-hegemony and transform political and social institutions. Finally, whether or not non-reformist reforms get implemented depends on the political pressure of social movements and the existence of alreadyexisting alternatives – without both, they lack inspiration and legitimacy. As the Red Nation argues about the necessity of direct action, ‘We must be straightforward about what is necessary. If we want to survive, there are no incremental or ‘‘non-disruptive’’ ways to reduce emissions. Reconciliation with the ruling class is out of the question.’44 So, even if there are already some connections between the degrowth spectrum and other social movements – especially in the area of movements against extractivism, cars and aviation, and unsustainable and nonsensical megaprojects, as well as, alongside the global environmental justice movements, against the deepening of the crisis of care work or in the form of the Spanish movement of Indignados – these are to be strengthened. Degrowth perspectives should play a role in all the social struggles aimed at undoing the imperial mode of living and fighting all kinds of hierarchies, discriminations, and power structures for a cooperative way of life.45 Importantly, this also involves alliances with international movements, particularly those in the Global South which are today some of the most militant and active: peasant and Indigenous struggles, landless worker and informal labourer movements, movements for decolonization and postextractivism and against structural adjustment and imperialism.46 This goes beyond merely strengthening the different social movements that exist: there is also a necessity to think and act strategically about the kinds of actions these movements might take, and how they could be more effective. The question of organization is often neglected in degrowth debates. How exactly will people organize? What are the mechanisms and processes of organization that will bring about this transformation? And how can we collectively shape – and plan – economic life at a community and societal level? One approach that can be useful to draw from here is that of ‘dual power’.47 It is called ‘dual’ power because it represents a system of power that operates parallel to the state and has the capacity, like the state, to determine the direction of society. Today, dual power can be understood as the effort to build movements and organizations that have the capacity to make demands from the state but that do not fully rely on the state to function. This has three different components, unique, but related to the strategies for counter-hegemony outlined above. First, and more obviously, it requires building closer connections and alliances among different movements, such as those for migrant, labour, climate, and racial justice, as well as anti-imperialist, feminist, and anticapitalist movements more broadly. This can be done through setting up networks of communication and resource-sharing, as well as through organizations that are able to coordinate between movements – some initial efforts have been done here already from a degrowth perspective.48 Second, there is also a need for organizing and for building movements that have the capacity to block or make demands from capital and the state. For example, strikes or blockades can be an effective tactic for pushing for demands, rather than merely performing such demands without power to back them up. This is needed because, first and foremost, even if politicians sympathetic to degrowth were to be elected, they would need both support and pressure from movements to push forward degrowth policies, since even such politicians would necessarily confront formidable vested interests to make the needed changes. It is also necessary because, by and large, those in power rarely care when you ask them nicely. When a strike takes away the profits of those in power, they are forced to come to the table and make a compromise. Of course, this requires dedicated, slow organizing in workplaces and where people live in order to build a critical mass of people who can build relationships of solidarity, block corporate profits, and guarantee accountability from elected representatives. Here, degrowth can rely less on the traditional male industrial working class, whose interests are often partly in line with defending the imperial mode of living (by being dependent on fossil-fuel jobs in the automotive or energy sectors, for example), and to a greater extent on new formations and struggles around precarity, patriarchy, racism, ableism, class hierarchies, ecology, and global justice – the ‘multitude’ of those left behind by the capitalist growth. Further, while those who primarily benefit from the imperial mode of living historically have had a privileged position in terms of making demands from the state, due to labour movements and to the character of labour in the industrialized core vis-a-vis capital, these groups no longer have the means to make demands as they once did following the deindustrialization of early industrial nations, the shifting of industrial activities to the Global South, the spatial shift of capital from industry towards information technology and real estate, and the increased precarity of labour more generally. This indicates a need to expand militancy beyond the traditional industrial sectors and into the more precarious and often feminized and racialized service sector, care industry, as well as into communities living in the line of strategically important speculative, extractive, and toxic projects such as gentrification, mining, pipelines, and brownfield sites.49 Third, these movements must also have their own sources of power, rather than just the capacity to resist vested interests. A key component here is the solidarity and cooperative economy – which can funnel resources to at-risk communities and on-the-ground struggles. Another component is setting up democratic structures within movements, such as people’s assemblies, councils, and confederations of movements and assemblies, so that movements are accountable to their members and are able to deliberate collectively. In linking economic democracy and direct democracy, social movements not only build the capacity to resist existing power structures, but also to chart their own future paths.50 Thus, a dual-power orientation is one last, but crucial, component of a counter-hegemonic strategy.

[PARAGRAPH BREAKS RESUME]

6.4. Confronting crises: Beyond ‘degrowth by design or by disaster’

The combination and interplay of interstitial strategies, implementing nonreformist reforms, and building counter-hegemony is our humble proposal as to how we might best conceptualize the transformation to a degrowth society. A common feature in these strategies is that proponents of degrowth are not waiting for a distant future ‘after the revolution’ but aiming to change things here and now. Another common feature is that the diversity of approaches is not seen as a problem but as enriching and complementary. 51 But the challenges are enormous, especially in view of the increasingly acute socio-ecological crises and the growing threat from authoritarian nationalist movements, which promise false solutions to the problems of the growth society. Not only is this transformation diametrically opposed to the interests of capitalist enterprises and the richest groups and individuals, as well as to fossil capital and the fascist movements defending it – since it aims to drastically limit or abolish the possibilities for exploitation and accumulation; it also contradicts the interests of national governments, which are fundamentally geared to and existentially dependent on strengthening competitiveness and economic growth. And, finally, not only is the monopoly over the legitimate use of force – held by growth-oriented states – an enormous challenge; potential upheavals in geopolitical relations also present a serious problem. If degrowth were implemented in a single country, it would likely lead to capital flight, capital strikes, geopolitical tensions, and possibly even armed conflicts.52

Ignoring these challenges and hurdles, fleeing from reality, is clearly not an option. It’s no use sticking our heads in the sand. Nor can we fall into the naïve idea that we just have to talk to everyone nicely to get them on board: we need intentional, large-scale organization and mobilization to achieve the changes we need. The alternative is intensifying global environmental and social crises and the increasingly brutal defence of the imperial mode of living – in short, a world of eco-apartheid.

Yet, what these proposals do not, and in many ways cannot, take into account is the unpredictable: the role of crisis in bringing about change. As we write, the coronavirus pandemic has halted world trade and caused stock markets to collapse, leading to a global recession. Though many epidemiologists did predict the high probability of another pandemic, it took many by surprise and changed everything. In the Global South, governments already heavily laden with debts, previously incurred from structural adjustment, buckled once more under another weight. In the United States, the government initially barely responded, leading to hundreds of thousands of avoidable deaths. Countries like Spain and Canada instituted welfare systems functioning similarly to basic income, nationalized health care facilities, placed moratoria on evictions and froze rents, or instructed companies to produce health equipment in line with state plans. And a historical antiracist uprising broke out across the world, sparked by one of the largest protests of US history against police brutality, structural racism, and the racist ‘politics of disposability’ revealed by the pandemic.53 Moments of crisis such as a pandemic are unpredictable events that fall upon us, junctures in the capitalist world-system that can lead to the rapid mobilization of social movements – and of repressive forces. Crises such as these can drastically affect our political projects and the horizons of what is possible by either expanding or curtailing them.

‘Degrowth by design or by disaster’ has become one of the main catchphrases to think through the role of crisis in bringing about a degrowth transition.54 It suggests that downscaling will happen whether we want it or not: it could be planned and largely peaceful, or unplanned and violent. But, by now, readers should recognize that wholesale collapse is explicitly not what is meant by degrowth. The wider issue, however, is that this phrase also implies a dichotomy between design and disaster, against which we want to push. Amid an accelerating ecological collapse and faced with the threat of ever greater economic crises, as over-accumulation spirals to ever higher levels, the likelihood of a social-ecological transformation without crisis is small. The relations between ‘by design’ and ‘by disaster’ are, however, complex: in some cases, disaster can be an opportunity for design; in other cases, an opportunity for deepening repression. A transition by design is unlikely; and yet, by relying on a crisis alone, it won’t happen.

In the degrowth literature, it is fair to say that the role of crisis is not well developed. Here we propose a more nuanced approach to the role of crisis in transformation, inviting our readers to think about it further. Let us begin by orienting ourselves once again according to Erik Olin Wright’s three transformation strategies: interstitial, symbiotic, and ruptural – which we discussed in terms of nowtopias, non-reformist reforms, and counterhegemony. Crisis, and its contradictory role in transformation, can also be conceptualized through this lens.

To begin with, interstitial strategies have a very important place in responding to crisis – and highlight the need to build up resilient communities. For example, when Hurricane Maria hit Puerto Rico in 2017, it resulted in billions in damages and the destruction of roughly 80 per cent of its agriculture. It was during this dark and frightening moment, when little aid was available, that democratically-run community centres such as Casa Pueblo in the city of Adjuntas provided solar-powered energy, food, and mutual aid to citizens. In any crisis, it is often local communities collaborating democratically based on altruism, resourcefulness, and generosity who are most effective in their response – relying on what Rebecca Solnit in A Paradise Built in Hell has analysed as proto-communist principles.55 It is in these tumultuous moments that nowtopias like Casa Pueblo become especially relevant: people are drawn to them, and they in turn help shape the imaginary of what a post-crisis world could look like. Though a small organization, they had an outsized impact on local politics. Following their success, organizations like Resilient Puerto Rico started building out a distributed network of solar power for community centres around the island. Two years later, the whole island rose in protest, kicking out the corrupt governor and, in part inspired by Casa Pueblo, which by then had become well known, began organizing local assemblies in every town and city. And there are hundreds of similarly empowering examples from other crises – from the decentralized, anarchist-inspired mutual aid efforts around the Common Ground collective after Hurricane Katrina in 2005 and Occupy Sandy in 2012 in the US, to the wave of solidarity clinics in Greece providing people with health care and medicine in reaction to EU austerity measures, and, most recently, the mutual aid networks that sprang up around the world in the context of COVID-19. By setting up these alternatives now, they will be in place to support and inspire people when they are shaken out of their daily routines in moments of tremendous change. In this way, the windows of opportunity resulting from the crises can be used as options for action, further expanding bottom-up movements, and awakening the desire for transformation.56

Second, crises can also be an opportunity to roll out or expand nonreformist reforms. Naomi Klein famously showed how elites used shocks – such as the fall of the USSR or Augusto Pinochet’s Washingtonbacked coup of Salvador Allende – to implement neoliberal reforms, eventually siphoning wealth towards the rich and driving greater inequality. 57 Conversely, however, the left can also take advantage of crises to respond effectively and accomplish far-reaching change. The pandemic served as an eye-opening case in this regard – as argued by Tim Jackson: ‘With an alacrity that was almost shocking, the coronavirus crisis revealed what capitalism has long denied: that it is possible for government to intervene in the health of society. Dramatically if necessary.’58 Notwithstanding later changes, initially governments and companies adopted policies that were quite radical, as we noted above. In the context of a mass movement pushing for change and sympathetic political leaders, such moments could have been opportunities to execute a Green New Deal platform at the national level.59

Moreover, the state has a central role during these crises, often acting as guarantor of financial institutions when capital investments see sudden and rapid fluctuations and devaluations. Certain events – a pandemic, the loss of confidence in large spheres of investments – can shift the global economy from overaccumulation of capital to a sudden devaluation of it. As Patrick Bond notes, while ‘uneven global development is on the degrowth horizon … capitalist crisis tendencies should be too’.60 Normally the brunt of these crises of devaluation are imposed on the poor through increasing their debts, while corporations, banks, and the rich are bailed out, thus creating the conditions for new forms of investment and a continuation of the boomand-bust cycle. Yet, nonreformist reforms could leverage crisis to the opposite effect: bailing out the poor, erasing Global South debt, letting purely financial assets devaluate, and making bailouts of companies and banks conditional on public ownership, democratic control, and strict criteria for social-ecological well-being.

This can be further illustrated with one example from the COVID-19 crisis. In the early days of the pandemic, the idea gained traction in the US that effectively addressing climate change would involve taking fossil fuels out of the market by nationalizing fuel industries and their oil, gas, and coal reserves – and that this crisis was a good opportunity to do so. A group of scholars in economics and energy studies argued in a 2020 white paper, ‘Out of Time: The Case for Nationalizing the Fossil Fuel Industry’, that this was the only way ‘to overcome many of the systemic hurdles that prevent meaningful action, allowing us to move towards decarbonization in a way that is planned, provides for workers, and supports communities’. In their convincing case, the authors refer to hundreds of historical examples in which the US government had nationalized key industries and critical resources during wars and financial crises. To achieve this, they argued no expropriations or compulsory acquistions were necessary – the easiest would be if the Federal Reserve simply bought majority shares of every fossil fuel company, whose value was at that time of crisis estimated to be no more than $700 billion (and thus much less than the corporate bailouts provided during the pandemic).61 This example shows how non-reformist reforms could potentially play critical roles in times of crisis. However, as this also makes clear, such an effective response to capitalist crises would need to go beyond traditional leftist or ecological Keynesian approaches by demanding a wholesale restructuring of finance and economy and by fundamentally shifting the balance of power between private capital and the democratic public – a response that certainly needs to be prepared beforehand and requires effective popular pressure.

Third, it is in moments of crisis that counter-hegemony can become especially powerful. Crises can shape a counter-hegemonic common sense, in that they are moments when the unfairness and irrationality of the economic system crystallizes in people’s mind – such as, when, during the coronavirus pandemic, many governments prioritized economic growth over people’s lives, resulting in a terrible calculus in which the elderly who do not contribute to the economy are considered disposable. Patrick Bond, in an article on the role of crisis for degrowth, points to two key ways that degrowth-oriented movements can organize in response to crises. First, an effective response to crisis involves building links with workers and communities in the Global South, as they are the most affected by the unequal imposition of debt following global economic meltdowns. Second, in the face of post-crisis devaluation of social reproduction (for example, cuts to medicine, housing, or increasing rates of energy costs), organized social movements may campaign for expansion of the requirements for survival, demanding access to basic goods and therefore expanding the desire for a care-based economy. 62 We would add that, more generally, organizational structures that build towards dual power can be activated and strengthened during moments of crisis as people turn to mutual aid organizations, alternative forms of democracy, and nowtopian experiments. What is imperative, however, is that these networks embed international solidarity in their organizing, as moments of crisis are precisely also moments when the losses of the rich tend to be socialized and shifted on to the poorest.

Yet crises are also charged with extreme risk. They can and often do strengthen the right and tend to reinforce the growth paradigm, capitalist hegemony and the logic of law and order that supports it.63 Today, political coordinates have shifted significantly with the rise of the New Right in the US, Europe, India, and Latin America. These populist movements see success by and large through promising to retain the status quo for the privileged middle class while breeding resentment among downwardly mobile working and middle classes against migrants or other ‘outsiders’ – taking advantage of declining rates of growth and migrant crises to further their agenda of maintaining a hierarchical status quo by any means necessary. This aggressive defence of the fossil fuel–dependent imperial mode of living has so far hardly been taken into account in the strategic discussion on degrowth and in the ecological left more broadly, even though this has a considerable influence on the windows of opportunity for communication and the implementation of degrowth.64

In times of crisis, the voter bloc of the nationalist right can expand rapidly, when many people favour stability and order over transition and the insecurity that comes with it. In times such as these, it is imperative that degrowth appears, not as destabilizing and inspiring fear, but as the necessary transformation that both expands people’s freedoms and gets to the root of the crisis itself. It is for this reason that a formation of a counterhegemonic common sense – one that is internationalist, antiracist, queerfeminist, and inclusive, and stands for global ecological justice – is one of our greatest tools in preventing a fascist resurgence today.

#### Job guarantee solves:

#### 1. ECONOMIC PROVISIONING. A degrowth job guarantee democratizes participation in economic production. This cushions the economic blow from imposing low productivity labor.

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4.5 The Role of ELR in Shifting to a Low-Throughput Economy

Clearly, we cannot continue to expand current forms of production. Perhaps other types of production can grow, and employment can be expanded in those sectors while employment in high-throughput activities is reduced. It has been suggested in many casual conversations on sustainable economic development that employment could actually be increased by “going green.” Such statements suggest that overall energy throughput in economic production can be reduced without causing a rise in unemployment provided new low-throughput production is more labor-intensive than the current energy-intensive sectors of the economy.

Skepticism of such claims is in order here, however, because our current economic and social systems will most likely cause population to continue to grow, modern agriculture to push more workers into more energy-intensive sectors in the developing world, and corporate marketing to channel incomes towards more consumption of energy-using goods and services. As a modern Jevons effect, we will destroy the habitats of more species and consume more carbon energy despite less resource use per unit of production. Nevertheless, it is technically correct to argue that macroeconomic policy should focus on increasing low-throughput, labor-intensive production while also decreasing high-throughput activity. The question is whether this task is compatible with full employment, improved living standards, and social equality.

4.5.1 Identifying Low-Throughput Activities

Structural economic change requires, first of all, the identification of low-throughput provisioning activities. Agriculture presents obvious cases where a shift in economic organization could raise employment while reducing the throughput of natural resources in the human provisioning process. According to a report by the agricultural study group GRAIN (2014):

Although big farms generally consume more resources, control the best lands, receive most of the irrigation water and infrastructure, get most of the financial credit and technical assistance, and are the ones for whom most modern inputs are designed, they have lower technical efficiency and therefore lower overall productivity. Much of this has to do with low levels of employment used on big farms in order to maximize return on investment. Beyond strict productivity measurements, small farms also are much better at producing and utilizing biodiversity, maintaining landscapes, contributing to local economies, providing work opportunities and promoting social cohesion, not to mention their real and potential contribution to reversing climate change.

There are other sectors of the economy where labor-intensive low-throughput activities can be expanded to replace capital-intensive high-throughput activities while potentially raising human well-being. The healthcare sector, for example, could be expanded to raise life expectancy and reduce days lost to illness and disability. Also, with ageing populations, there is also a greater need for caregiving in general, and such activity is also often quite labor-intensive. Care for the aged is largely provided informally by family and neighbors, and such voluntary provisioning makes caregiving inherently unequal and dependent on family structures. A more formal system, still highly labor intensive, would enhance security and well-being for the aged in modern market societies.

Education will remain a labor-intensive process even if new information technologies are introduced because much learning is tacit in nature. Polanyi (1958) explains that not all technology and knowledge can be codified, by which he means those types of information that can be written down in the form of clear instructions, blueprints, or recipes, or explained in textbooks or on the internet. Instead, the passing on of society’s stock of knowledge and technology requires personal example and guidance. Also, on-going educational activities for people of all ages are also necessary for maintaining a good social and economic environment, according to educators like John Dewey (1897), and socialist thinkers like Paulo Freire (1970). Especially important given the fundamental inconsistencies of our current economic system and the complex issues related to our coexistence with the natural environment are Dewey and Freire’s emphasis on using education to motivate critical thinking, something that automated and routinized education cannot teach. Freire (1970, Chap. 2) specifically advocated problem-solving education that teaches students to think for themselves, feel confident to confront the problems they face, and to feel capable of making choices on how to deal with problems. Such self-liberating education necessarily requires a substantial inter-active and nurturing labor input. Other low-throughput activities like entertainment, art, maintenance services, repair services, sports activities, natural parks, scenic reserves, and activities related to maintaining the commons also need to have more labor allocated to them.

Post Keynesians understand that these shifts in production must be accompanied by shifts in demand. In general, people consume goods and services both individually and jointly, as some goods are rival goods that can only be consumed by one person at a time, while other goods are non-rival goods that many people can consume simultaneously. Only one person can wear a shirt or drive a sports car, but many people can enjoy natural scenery, public transportation, public television broadcasts, and music in the park at the same time. Environmental limits points to the need for a shift towards collective consumption and away from individualized consumption. This shift will require changes in work time versus leisure.

4.5.2 Changing Lifestyles by Reducing Work Hours

The total number of jobs can also be increased by reducing the hours that each individual person engages in provisioning activity. A decrease in working hours is also necessary in order to shift consumption from high-throughput products to less energy-intensive products because consumption of the latter often require more leisure time. Because fewer working hours increases leisure time at the expense of material production, some authors like Schor (2013) make the case that a shift towards fewer working hours will actually improve “the quality of individual and community life.” Coote and Franklin (2013) of the New Economics Foundation (NEF) detail how quality of life issue are intimately related to working hours because it takes time to consume services, community activities, and cultural activities. Time-constrained consumers inevitably end up favoring material consumption over collective consumption in the form of community activities. Coote and Franklin argue that the latter are currently under-consumed because people are time-constrained and effectively forced to engage in high levels of individualized material consumption in place of more time-intensive social activities that actually increase the well-being of group animals such as human beings. In an earlier work, Coote et al. (2010) estimated that if British workers (rather than business owners) capture all expected annual productivity gains over the next three decades and if they take those productivity gains in the form of fewer hours of work, then working hours can be reduced to 21 hours without any loss in income accruing to workers.

Of course, a shift to shorter working hours will require worker solidarity and strong unions, supported by collective government institutions. The market power that employers have gained over workers in most countries by means of political lobbying, immigration, and overseas outsourcing has completely stopped the 100-year-long trend towards shorter working hours in the United States, for example. As a result, median wages actually fell over the past 40 years despite continued labor productivity gains. Shorter work hours have been strongly opposed by employers, and they will almost certainly be actively opposed in the future; hence the Économistes Atterrés’ call for stronger democratic institutions and responsive government. The wealthy will not voluntarily cede the privileges that enable them to accumulate even more.

4.5.3 Employment of Last Resort

Keynes (1936) advocated a policy of explicit job creation to combat high unemployment and economic depression. Today, a number of economists have together developed a jobs strategy that calls for the government acting as employer of last resort (ELR). Under this strategy, the government stands ready to employ anyone who seeks work at some minimal living wage, so that government employment acts as an automatic employment stabilizer and a basic wage floor. For example, Tcherneva (2013) argues that current monetary policy effectively targets investment, not employment, and there is no reason to expect that more investment will substantially reduce unemployment. In fact, capital is a substitute for labor, and Onaran and Galanis (2012) raise the possibility that an easy monetary policy that increases investment may actually lower wages and thus reduce aggregate demand, with the result that neither aggregate demand nor employment expand. As we now know, in the United States the highly expansionary “quantitative easing” monetary expansion by the Federal Reserve after the 2007–2009 recession was very slow in generating employment. In fact, the expansionary monetary policies before the 2007 financial crisis generated little employment or wage increases for most workers, and their main effect was to create a housing bubble that ultimately sank the global economy. Tcherneva and other heterodox economists linked to the Post Keynesian school, such as Minsky (1982), Harvey (1989), Wray (1998), and Forstater (2004), have called for more direct forms of job creation by the government.

Some of the rationale for more focused macroeconomic policies above reflects the recognition that general monetary and fiscal policies affect both the demand and supply sides of an economy. One of the alleged weaknesses of the Keynesian macroeconomic model is that it deals exclusively with the demand side of the economy, but this criticism was not entirely accurate even if Keynes’ exposition in the General Theory did focus largely on the short-term effects of policy. Several close followers of Keynes almost immediately expanded Keynes’ analysis to include a supply side as well as a demand side; see, for example, Harrod (1939) and Domar (1946). In the case of ELR, the creation of jobs affects the amount of products produced in the economy. Employing people to teach creates education, and employing people to provide medical services creates a healthier population, just as employing people to build a bridge creates a bridge. On the supply side, ELR can therefore play a direct role in enabling a restructuring of economic activity towards low-throughput production.

In order to guarantee full employment, employment of last resort (ELR) programs can be designed to directly put people to work only in low-throughput industries. At the same time, current high-energy and high-resource throughput industries must be greatly reduced in size, and quickly given the rapidly moving processes of global warming and biodiversity loss. ELR is a program that is not only more effective in creating employment, but policymakers can specify where and what kind of jobs are created. In short, ELR can directly shift work from high-throughput production, which can be discouraged by higher taxes and outright prohibitions, and towards low-throughput industries through government job creation for workers laid off in the former industries. ELR’s role as an automatic macroeconomic stabilizer is greatly expanded under the current scenario of a failing capitalist economy that is approaching environmental disaster. ELR can thus serve as a long-run dynamic stabilizer of the restructuring of human society towards a zero-growth economy, a more equal society, and the sustainable coexistence of humanity with nature.

#### 2. SOCIAL TRANSFORMATION. It decouples employment from profits which overcomes social contradictions currently stymying degrowth movements.

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3.4 Paths to Full Employment

Building on the theory of effective demand and modern money theory (MMT), post-Keynesians have proposed two alternative paths to full employment. The first and most common approach relies on fiscal policy to fill the demand gap. The second approach calls for direct job creation through an employer of last resort or JG program. Neither policy was designed to address environmental concerns and indeed both promote growth. However, when compared, it is clear that the JG offers advantages over demand management policy with respect to both employment and the environment.

The demand gap approach seeks a handle on employment via the manipulation of aggregate demand. When aggregate demand in the private sector is insufficient for full employment, fiscal policy can be enacted to boost demand (Arestis and Sawyer 2003, 2004). The three essential goals of the demand gap approach are: (1) increasing aggregate demand, (2) stimulating private investment and (3) increasing productive capacity (Tcherneva 2008, p. 67). This approach suffers from two obvious weaknesses. On the employment front, it is indirect. If the goal is to increase employment, why not hire workers directly?8 On the environmental front, the flaw of the demand gap approach is that it aims to achieve full employment through economic growth. As Tcherneva notes, “this is a pro-investment pro-growth policy” (ibid.).

The JG approach proposed by Minsky (1968), Wray (1998) and Mitchell (1998) represents an alternative path to full employment. Rather than acting through aggregate demand to stimulate private investment, the JG achieves full employment by directly hiring workers. This offers three advantages over demand management. First, it eliminates unemployment immediately. Second, it channels government spending directly to employment. And perhaps most importantly, it can be used to influence not only the quantity but also the quality of employment.9

With regard to environmental goals, however, the most important advantage of the JG is that it severs the link between aggregate demand and employment. As Mitchell and Wray point out, “ELR achieves full employment without regard to the level of aggregate demand” (2005, p. 236). If employment and aggregate demand can be decoupled, then it may be possible to decouple employment from economic growth. In other words, a JG might provide a means for overcoming the existing trade-off between economic and environmental goals.

In the context of Boulding’s model, a JG provides a novel solution to the problem of overproduction. Suppose a situation in which production and consumption are diverging such that profit expectations are falling. According to the demand gap approach, there are two possible outcomes: (1) falling production, rising unemployment and possibly a depression, or (2) rising consumption, increased aggregate demand and stable employment. With a JG in place, the third option is to allow production and aggregate demand to fall, while maintaining full employment, thus avoiding a depression. In this case, both the economic objective of full employment and the environmental goal of reducing output (throughput) are achieved.

A JG eliminates the negative impact of falling production on the level of employment. If JG workers earn a lower wage than private sector workers (and workers spend what they get), aggregate demand and consumption also fall. Of course, a JG as such does not necessarily serve environmental objectives. After all, it will increase employment and aggregate income, and thus it seems a JG must increase aggregate demand, output (throughput) and economic growth.10 However, owing to the special nature of JG employment, it may in fact be made consistent with falling aggregate output and income in the long-run.

In this regard, the most important feature of the JG is that it transcends the conditions of monetary production. Because JG work is not constrained by money profits, it can be channeled to all kinds of socially beneficial projects that cannot and will not be undertaken by the private sector.11 This is the basis for the “green jobs” JG proposal put forward by Forstater (2003, 2004, 2005). However, green jobs represent only one of the possibilities opened up by a JG, and by itself, a green jobs’ approach is not likely to bring about the required reduction in growth necessary for a sustainable economy. Another more radical potential opened up by the removal of the profit constrain is that of reducing productivity.

As proposed, a JG will hire off the bottom and “the pool [of JG labor] will tend to contain the least productive workers” (Wray 1998, p. 139). And since the object of the program is to provide jobs, JG employment should be more labor-intensive than private sector employment further reducing productivity. Rather than viewing low productivity as a bad thing, if environmental sustainability requires reduced growth, low productivity ought to be a policy goal.12 Moreover, it is easy to see how reducing productivity is consistent with improved working conditions since the simplest ways to achieve lower productivity are slowing down the production process, decreasing the length of the working day and replacing mechanized mass production with more humane and less alienating forms of craft labor. Finally, while reduced productivity as a policy goal may be a tough sell, it should not be forgotten that the point of a JG is to improve peoples’ lives and not to increase output.13

As a policy objective, reducing productivity raises a serious problem: how is productivity to be measured? Reducing productivity specifically refers to increasing employment (labor time) per unit of output and/or decreasing output per unit of time. The real problem then is how to measure output. In a one-commodity world, there is no problem because a unit of output is defined. In a world of heterogeneous goods, the obvious solution is to convert all goods to money values through the use of market prices. But if money values of output are used to construct a measure of productivity, there is no guarantee that reducing productivity will achieve the underlying goal of reducing throughput because there is no reason to expect that relative prices for any particular pair of commodities will provide an indication of relative throughput.

The problem of measuring productivity represents the biggest theoretical obstacle to operationalizing the degrowth model presented in the next section. And while no perfect solution is clear at present, there are a variety of ways addressing the problem without necessarily solving it. To begin with, there is a strong historical correlation between GDP and throughput. This indicates that using money values to measure productivity may be a useful if imperfect solution at the aggregate level. On the other hand, when operationalizing a JG, productivity might be measured on an industry basis overcoming the problem of heterogeneous goods. For example, if JG workers produce wooden chairs that approximate similar wooden chairs produced by the private sector, a unit of output is defined. Now reducing productivity in the JG sector is a simple matter of ensuring that more labor time is required to produce a chair in the JG sector, or that over any period of time JG production results in fewer chairs produced. This can be achieved in the JG sector by (1) adopting more labor-intensive methods, (2) maintaining the same methods but slowing down production and (3) maintaining the same pace and method of production but reducing the length of the working day. The point here is that even though the problem of measuring productivity remains to be solved, it is still meaningful to talk about reducing productivity as a policy goal.

Another possibility that emerges with the elimination of the profit motive and a slowing down of production is an emphasis on quality and durability over quantity and marketability. In other words, JG work can be geared toward producing the best use value as opposed to the most exchange value. Increasing the durability of output is a vital strategy for reducing rates of production and consumption because, by definition, goods of higher durability are consumed (used up) more slowly. With a falling rate of (physical) consumption, the same stock of useful goods can be maintained at a lower rate of production. As Boulding (1949) argues, confusion in economic theory centered on the concepts of income and consumption has led to the belief that welfare is increased by maximizing production and consumption, “There is a very general assumption in economics that income (or out-go) is the proper measure of economic welfare, and that the more income and out-go we have, the better. In fact almost the reverse is the case. Income consists of the value production: out-go is the value of consumption. Both income and out-go are processes involved in the maintenance of the capital stock … it is the capital stock from which we derive satisfactions, not from additions to it (production) or subtractions from it (consumption).”14 Thus, “the objective of economic policy should not be to maximize consumption or production, but rather to minimize it, i.e. to enable us to maintain our capital stock with as little consumption or production as possible” (ibid. p.79).15

Facing environmental limits, Boulding is right about what our objectives ought to be. However, the logic of production for profit dictates otherwise. It is true, for instance, that a house that never depreciated would be an improvement for its owner. The problem with producing durable goods in a monetary economy is that if needs are met, unemployment increases. It is better to build houses that fall apart each year. But this is where the JG comes in. If workers are guaranteed jobs, then increased durability, which lowers throughput, does not threaten employment.

Finally, the JG offers the potential for falling aggregate demand without falling employment. Suppose a JG is in place and consequently the economy is operating at full employment. When a recession occurs, investment, output and employment in the private sector fall. However, the total volume of employment remains stable. Workers simply shift from the private to the public sector. If, as proposed by JG advocates, the JG wage is lower than the private sector wage, then aggregate demand falls as the relative size of the JG sector grows.16 And if JG work is less productive than private sector work, aggregate output also falls. The key here is that full employment is maintained during the recession even as aggregate demand falls. And falling output is consistent with full employment so long as JG workers are less productive than private sector workers.

Thus far, it has merely been shown that falling aggregate demand and output are consistent with full employment under a JG scheme. This will occur during a recession, given the traditional JG assumptions. However, over the cycle, a JG may result in higher levels of aggregate demand and economic growth because the fall of demand and output during a recession is less than it would be in the absence of the JG. Assuming that during the recovery phase of the cycle the JG pool shrinks to zero, all gains in terms of reduced productivity will vanish, and output over the cycle will be higher than would be the case without a JG. Moreover, if the JG mitigates skill depreciation associated with unemployment and/or raises the productivity of workers re-entering the private sector through job training/ placement, this will further stimulate economic growth.17

Yet it is highly unlikely the private sector will absorb the entire JG pool during the recovery phase of the cycle, as the private sector has a very poor track record of achieving full employment. This implies that some reduction in productivity will be retained over the cycle. However, with respect to ecological limits, the problem is that the economy will still be growing. And unless economic growth ceases to be a threat to the environment, then growth must halt.18 This begs the question of whether the JG can be used to purse the more radical objective of degrowth.

3.5 Outlines of a Full Employment Degrowth Model

A two-sector model can be used to derive the minimum conditions required to eliminate growth while maintaining full employment in the context of a JG program. The basic conditions for reducing growth are: (1) the JG sector is less productive than the private sector, (2) the JG wage is lower than the private sector wage and (3) over time, JG employment must grow as a relative share of total employment. The first two conditions are part of traditional JG proposals. What is new in this case is that low and/or decreasing productivity in the JG sector becomes a policy objective. The third condition has not previously been put forward as an intended outcome of the JG.19 This condition obviously has radical implications. In short, it suggests that the path toward a sustainable economy leads away from monetary production.

Assuming these conditions are met, it is possible to demonstrate how full employment is consistent with a secular decline in output under a JG. To simplify, the following exposition ignores changes in the size of the labor force and productivity growth in the private sector. The initial implementation of the JG will cause a one-time increase in aggregate demand, output and employment (analogous to the one-off inflation likely to occur with the initiation of the JG). However, during the bust phase of the business cycle, workers will be channeled from relatively high productivity, high wage, private sector employment into low productivity, low wage, JG work. If, during the ensuing boom phase of the business cycle, a portion of the JG workers choose to remain in the public sector, then JG employment will grow as a share of total employment over the cycle. So long as some portion of the workers that newly enter the JG pool during each recession choose to stay in the pool during the subsequent recovery, each cycle provides a net addition to the JG sector equal to the net diminution of private sector employment. With JG employment growing as a relative share of total employment, the rate of growth of aggregate output and aggregate demand decline.

Nell (n.d.) provides a useful diagram to illustrate these dynamics. The vertical axis measures aggregate output (Y) and the horizontal axis depicts employment (N). With a JG in place, the economy is always at full employment (Nf). Private sector employment is measured from left to right, and JG employment is measured from right to left on the horizontal axis. The bold black line indicates the difference in productivity between the two sectors. Actual output is determined by the sum of JG and private sector output. When JG employment is zero, all workers are employed in the private sector and output reaches its maximum. When private sector employment is zero, all workers are employed in the JG sector and output reaches its minimum. When all three conditions of degrowth hold, then over the cycle the economy moves down and to the left along the bold black line (Fig. 3.1).

In the framework outlined above, the rate at which the growth of output declines will depend on two factors: (1) the difference in productivity between JG and private sector employment and (2) the rate of growth of the JG sector as a share of total employment over the cycle. Thus, if we know the difference between productivity in the JG sector and the private sector, we can calculate the required rate of growth of the JG sector as a share of total employment necessary to achieve a specified decline in the [FIGURE 3.1 OMITTED] rate of growth of output. Or vice versa, given the rate of growth of JG employment as a share of total employment, we can calculate the required difference in productivity between the two sectors to achieve a specified rate of degrowth.

The force driving degrowth in this framework is the business cycle. The endogenous fluctuations of a capitalist economy act like a pump generating a flow of workers into and out of the JG pool. The crux of the whole argument hinges on the appropriate specification of the “valve” mechanism required to ensure that, on average, the in-flow of workers into the JG pool exceeds the out-flow of workers taking jobs in the private sector. The valve cannot be a monetary incentive since wages in the JG must be lower than private sector wages to achieve the reduction in aggregate demand required for degrowth. But because JG employment is not constrained by money profits, a multitude of nonmonetary benefits may be offered to encourage workers to choose lowerwage jobs in the JG.

So what are examples of such non-monetary benefits? Freed from the profit constraint, a JG opens possibilities for all kinds of improvements in working conditions, hours of work and types of paid employment. How many people currently work jobs they hate, while secretly dreaming of a career in the arts—writing plays or novels, becoming a painter, dancer, actor or musician? How many parents are forced to leave their children at day care so they can pay the bills? How many would go back to school if they had spare time or income? How many would accept a smaller salary if they could work fewer hours and still have access to health care? How many would accept a pay cut if it meant they could work from home or in their communities? How many would accept a lower wage if it meant they could engage in fulfilling work like growing food, restoring wilderness habitat, building parks or providing care to their friends and neighbors? More important than its potential for altering the quantity of employment and output, the real promise of the JG lies in its potential for transforming the quality of work. Above all, what makes the JG a powerful tool for achieving the goals of degrowth is the choice it provides individuals to opt out of monetary production.

3.6 Conclusion

This chapter seeks a way out of the dilemma posed by the dual crises of unemployment and environmental decline. Keynes’s theory of effective demand is a useful starting point for this task because it identifies the underlying causes of both crises. In a capitalist economy, the object of production is money profits. Profits are necessary for employment, and in the aggregate, the realization of profits requires continuous growth. So long as we remain confined to a system of monetary production economy, full employment requires exponential growth, and we are stuck with the trade-off between social and ecological prosperity.

The promise of the JG is that it solves the problem of unemployment by transcending the constraints of monetary production. This opens the way not only to degrowth in terms of declining aggregate output but perhaps, more importantly, in terms of a fundamental transformation of the economy away from alienating and exploitative labor processes and toward a system in which work itself is an end and not simply a means to consumption.

#### 3. POLITICAL COALITIONS. A job guarantee defangs the pro-growth alliance between capital and labor.

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There is yet another reason to focus on employment: people value their participation in the provisioning process. Neoclassical economics erroneously positions work as exclusively a cost, but economists since Veblen (1899) and Keynes (1930) through case studies by Lopes (2011) and happiness studies by Veenhoven (1996), Blanchflower and Oswald (2000) and Dolan et al. (2008) make it clear that we value work. We value more pleasant work more than stressful or dangerous work, of course, but unemployment is severely problematic to most people even when social programs compensate for the lost income. Hence, an ELR policy can improve human well-being by providing more pleasant and more valued work experiences.

4.5.4 Overcoming Resistance

ELR also plays a critical indirect role in reducing opposition to the restructuring process by protecting workers during the transition process and sustaining the income of workers as the economy transitions to fewer work hours and more leisure time. After all, the difficulty with instituting an ELR program is political, not practical. In most countries, governments already employ large numbers of people, and, in line with the low-throughput industries discussed above, they are well positioned to expand activities carried out in the commons and as public goods. Specifically, government already provides most of the world’s formal education, healthcare, social services, and public transportation. In many countries, government also provides financial services, personal care services, and most infrastructure services. Given its traditional status in developing economies, the active government promotion of sustainable labor-intensive agricultural practices will, by default, employ many people. Given the massive job destruction by modern energy-intensive, chemical-intensive, and capital-intensive agriculture, merely reversing this process will restore a very large amount of recently lost employment.

There is a very daunting political problem, however. Global warming, biodiversity losses, and resource depletion require that ELR programs favor collective action over private activities. Restructuring the human economy requires curbing many currently profitable and highly capitalized industries, and the resistance will be fierce. The current resistance to even modest efforts to slow global warming or protect other natural resources clearly illustrates the difficulty in bringing about the thorough economic restructuring. But by ensuring all workers will have a job, ELR substantially reduces worker anxiety about the disruptive aspects of environmental policy. To date, labor organizations have often sided with capitalists against environmental regulations and eco-taxes because of the fear that workers would lose their jobs along with the capitalists’ fear of the loss of wealth. ELR breaks that link by guaranteeing employment. ELR also strengthens labor’s power in the labor market by putting a floor under wages, making workers even more likely to actively support the restructuring of the economy.

4.6 Some Final Observations

While Post Keynesians and neoclassical mainstream economists differ sharply in how to deal with economic recessions and restore economic growth, economists from both schools make the mistake of ignoring the fact that environmental constraints make economic policies based on restoring economic growth unsustainable. It does not matter whether austerity or pump priming is more effective for restoring economic growth after a deep recession; economies cannot grow the way they have over the past 200 years. Simple Post Keynesian pump priming that does not alter the structure of the economy towards the consumption of low-throughput products will ultimately fail just as spectacularly as the austerity programs they criticize.

We have described macroeconomic policies that can solve the decroissance-unemployment dilemma. By means of employment of last resort policies we can keep people busy while also restructuring our provisioning activities so that they become more compatible with our natural environment. These ELR policies will also reduce the resistance to the sharp shift in economic organization that our urgent ecological problems call for. However, this economic restructuring clashes directly with the culture and special interests of capitalism. It is difficult to imagine, except in the case of the very clear presence of environmental catastrophe, that capitalist special interests will embrace such an economic restructuring. The vested interests in the capitalist system, the bourgeoisie and the upper echelons of the working class, will not agree with reduced working hours or ELR policies, since both raise the price of labor and thus will tend to reduce the profits and rents that accrue to the privileged in the propertied capitalist system. Nor will they agree to reverse the many privatizations of the commons that we have endured over the past three decades. And a large jubilee canceling all debts while we enhance the social safety net will be met with equally powerful opposition. It is even difficult to imagine the general population, which increasingly views its precarious capitalist materialist consumption as its only accomplishment in life, will embrace a structural change in our economy. Perhaps the successful introduction of ELR policies can convince a critical mass of workers that decroissance will not imply a reduction in living standards.

#### National policy spurs global critical mass and positive feedbacks that reinforce global phase-downs in consumption.

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Degrowth

Another idea that has emerged in the global North is that of ‘degrowth.’ This concept addresses the excessive carbon footprint of the societies of the global North, on the premise that people could have good qualities of life without constant economic growth and resource depletion, doing so by making major cuts in certain economic activities, and curbing the wastefulness that consumer culture and lifestyles endorse (this section builds on this literature, including Bliss, 2018; D’Alisa, Demaria, & Kallis, 2015; Escobar, 2015; Kallis & Vansintjan, 2017; Schwartzman, 2012).

One such sector, especially prominent in the United States, is the military, which absorbs more than US$1 trillion a year and produces nothing of social value (the argument that it makes the United States safe can be countered in numerous ways, including that maintaining a small part of its nuclear arsenal would deter invasions from any quarter). Such a change in U.S. foreign policy would reduce wars abroad and allow societies to find their own ways and eliminating the export of arms to foreign countries would reduce military spending and shrink militaries abroad as well. This principle could be applied to other armsproducing nations in the North, including the United Kingdom, France, and Germany. Other powers such as Russia and China might follow suit, with much the same effect. A massive reduction in global resource use and greenhouse gas emissions would follow, helping on the climate change front while reducing the likelihood and human costs of wars.

A major objection would be the loss of jobs, both in the military itself and in the arms industries and their allied activities in steel-making, electronic components, and the fossil fuel industry. But repurposing the millions of men and women in the militaries of the world could create the labor force necessary for the transition to a post-fossil fuel world, while industries that made arms could be converted into the production of renewable energy, public transportation infrastructure, and retrofitting of houses and businesses.

The fossil fuel industry is also a prime candidate for degrowth, if the political will existed. The massive subsidies that the governments of the world, again led by the U.S., lavish on the main drivers of global warming (Abraham, 2017), if redirected to renewable energy production and research and development could hasten the global transition in energy, heating and cooling, and transportation that is required in the next two decades, while creating safer and cleaner jobs for the workers displaced. The stranglehold which the industry has on politicians in the global North would also be broken, leading to more democratic spaces to enact projects for change.

Large industrial agriculture is another area for degrowth, combined with a transition to less meat in diets in the North. The use of pesticides and fertilizers, the waste produced by grazing animals, and the land and water use associated with these activities could all be reduced enormously, freeing land for edible crops and improving health as well. And agriculture built around smaller farms, more organic methods of production, and permaculture principles would feature jobs and feed the world in a healthier manner. The 15–18 percent of greenhouse gas production that comes from agriculture could be cut, perhaps drastically.

The degrowth principle could be applied to many other sectors of the economies of the North, including advertising and the technology sector. Less products produced for rapid obsolescence, less disposable items made with plastic and shipped great distances, more ecologically appropriate processes in making necessities like clothing, housing, and transportation would reduce resource depletion and pollution, enhance the general health of societies, and lead to further cuts in emissions. Technology could be redirected to lessdamaging ends and help solve the many obstacles in the way of truly green energy, transportation, and housing.

Sectors that could grow with more funds and better policy would include all the caring services, health care, and education. These investments would boost the quality of people’s lives, provide meaningful jobs, and create a population prepared to innovate more and consume less. Public transportation and urban redesign would help relocalize economic and social life and divert resources from wasteful personal travel in cars (going electric will not necessarily result in less emissions unless the transportation sector is redesigned to make public and lower impact travel to work and recreation the better choice) and the high ecological costs of aviation, shipping, and trucking. There is much room for creative planning, ecologically sound economic activity, and more meaningful jobs that opens by starting from the principles of degrowing the economy.

Buen vivir

The global South figures prominently in imagining more just and earth-friendly societies. One of the most exciting principles for this is that of buen vivir/vivir bien, a translation of Andean indigenous principles such as sumaq qamaña (Aymara) and sumak kawsay (Quechua). Drawing on long-standing indigenous principles which have survived 500 years of Western occupation and its national successors in the independent states of Bolivia, Peru, and Ecuador, this is based on reciprocity, co-existence in a harmonious relationship with nature, consensus decision making, and communal solidarity. Pablo Solón captures some of the subtlety of the terms in rendering them as ‘plentiful life,’ ‘sweet life,’ ‘harmonious life,’ ‘sublime life,’ ‘inclusive life’ or ‘to know how to live’ (Solón, 2016, 2018).

In addition to its indigenous roots, a key document in the elaboration of buen vivir was The Universal Declaration of the Rights of Mother Earth, which came out of the World People’s Conference on Climate Change and the Rights of Mother Earth held in Cochabamba, Bolivia in April 2010. This manifesto defended the principle that all living beings, human and non-human, had certain rights, among them: ‘the right to life and to exist; the right to be respected; the right to regenerate its bio-capacity and to continue its vital cycles and processes free from human disruptions’ (World People’s Conference on Climate Change and the Rights of Mother Earth, 2010, April 27).

The new constitutions of Ecuador and Bolivia enshrined the principle of buen vivir as an ecological model of development based on recognition of the diversity of ‘nations’ inside a plurinational framework (Vibromancia, 2015), though they have had trouble living up to the ideal in actual practice. Meanwhile, Latin American scholars and activists have written extensively on the concept and the need for new, non-Northern knowledge formation, establishing the relevance of these for climate justice and conceptions of political economy that go beyond capitalism (Acosta, 2017; Bautista, 2017).

Though reluctant to codify buen vivir into a program or a set of principles to apply everywhere, Solón focuses on what it might mean in the Bolivian context, worth quoting at length:

Where could our efforts have been directed? Toward ensuring that the new economy be centered precisely on the peasant and indigenous economy and small-scale local economies. Toward ensuring a real redistribution of the wealth concentrated in the hands of the financial, extractivist and agro-industrial sectors … The true potential of countries like Bolivia is in agro-ecology, agro-forestry, the strengthening of food sovereignty based on the indigenous and peasant communities … In the Vivir Bien framework, the objective is to generate greater resilience in the local and national economies faced with the vagaries of the crisis-ridden global economy. It is not a question of abandoning exports but of ensuring that the economy does not revolve around the export of a handful of products. The goal is to be more sovereign, strengthening the local human communities and ecosystems of the Earth … Without a real and effective democracy, it is not possible to advance in the self-management, self-determination and empowerment of the communities and social organizations that are essential to Vivir Bien … To that extent the future of Vivir Bien largely depends on the recovery, reconstruction and empowerment of other visions that to varying degrees point toward the same objective in the different continents of the planet. Vivir Bien is possible only through complementarity with and feedback from other systemic alternatives.

(Solón, 2016)

The redesign of economies in both the North and the South around the principles of degrowth in the North and buen vivir in the South makes them allied visions for a global transition away from capitalism toward a better future for the people of the world, economically, politically, culturally, and ecologically (Escobar, 2015). In this way, these are the seeds of hope that we must plant and nourish. The collection of systemic alternatives found in Pluriverse: A Post-Development Dictionary (Kothary, Salleh, Escobar, Demaria, Acosta, 2019) provides a good map of some of this new thinking; see also the Global Tapestry of Alternatives project.

Intersectional ecosocialism

How might these promising ideas for local regeneration be supplemented at the level of the state? A number of ‘blueprints’ for a radical governmental policy of the future already exist. One perspective on this is that of ecosocialism (for recent discussions and comprehensive overviews, see Baer, 2018; Löwy, 2018). Ian Angus and Simon Butler have written: ‘In every country, we need governments that break with the existing order, that are answerable only to working people, farmers, the poor, indigenous communities, and immigrants – in a word, to the victims of ecocidal capitalism, not its beneficiaries and representatives’ (quoted in Angus, 2016; Angus & Butler, 2011, pp. 198–199). In the United States, discussions around the Green New Deal have stimulated this thinking from the national to the local level and beyond. To highlight just a few, we can mention: (1) an Ecosocialist Green New Deal (Franklin, 2019); (2) a Feminist Green New Deal (Feminist Agenda for a Green New Deal, 2019), (3) Howie Hawkins’ Green Party Ecosocialist Green New Deal (Hawkins, 2019); (4) the Red Deal (A Red Deal: Indigenous Action to Serve Our Earth, 2019): (5) Jeremy Brecher’s Green New Deal for Workers (Brecher, 2019); and (6) Bernie Sanders Green New Deal (2019).

One promising improvement on the basic principles of democratic ecosocialism, which are already a vast improvement on twentieth-century socialism, would be the articulation of a vision of intersectional ecosocialism. Such an approach would attend to the equal valence of gender and race alongside class, the importance of connecting all struggles for social justice, with strong solidarity across national borders to connect the dots of the climate crisis to propose and prefigure a completely different alternative to capitalism in all its forms.

How do we get there? Notes for transformative practices of social transformation

What is the potential of all of these ideas, visions, and alternatives? Are they viable models? Do they help us think our way past the capitalism–socialism binary? That is, the difficulty of reforming the capitalist economy and the state to the degree and with the speed we need that to happen on the one hand, and the seeming utopianism of a socialist or anti-capitalist revolution on the other. The question of strategy remains, as always, the burning question: how do we propose to accomplish all this?

My own best idea is that what is needed to transform global societies is the emergence of new kinds of social justice-oriented entities that come out of and are more tightly coupled with diverse social movements than in the past, so that they are at once more accountable to the social forces that comprise them, and broader.3 We have caught glimpses of these social movement-driven parties in the long experience of Kerala, India with left-wing governments (Franke & Chasin, 1994), the more recent rise of Podemos in Spain out of the Indignados movement (Flesher Fominaya, 2020), or the experiment in left-green rule in Iceland after the Saucepan Revolution overthrew the conservative party of the bankers that brought on the crash of 2008 there (Chataigne, 2009; Júlíusson & Helgason, 2013; Solnit, 2008). But what we seek is a new kind of party, not just another party, one that would be both more global in its ecological vision and more empowering of the local in its domestic policy than parties or movements have been in the past. The role of transition towns in this scenario would be to create local spaces for a cooperative economy that self-governs with a profound sense of the need for resilience and a degrowth-inspired transition away from fossil fuels. Buen vivir complements this from a Southern perspective that is very much in line with its Northern counterpart and draws on indigenous values through the lens of the multiple crises of the present. Intersectional ecosocialism might be a national-level goal for a new kind of party.

How to build from these local alternatives to a participatory confederation on the scope of a nation without sacrificing their autonomy would be one question such new ‘parties’ would have to engage. How to integrate local cooperatives into regional and national-level economies based on degrowth would be another. Working together with and supporting like-minded governments on a global scale would be required to coordinate action on the climate crisis. The best guarantee that such experiments could work toward all these ends would be the autonomy of the social movements and economic cooperatives that enabled their rise to a position of power to confront the entrenched political and economic elites and international institutions that set the rules of the game today.

These are huge questions, made visible by the joint contributions of the new movements for radical transformation of the twenty-first century. Seeking answers to them is a worthy task for engaged scholars and activists. The youth who are now inspiring a newly energized global climate justice movement deserve and demand nothing less. We must now learn to listen to their voices.

The world in 2030

The world that is coming can take innumerable forms. We cannot map it because we cannot see it. Knowing what we want is a crucial step but knowing that what we design will emerge only in the process of going towards it is a useful check on thinking in the old ways about how to transform the present into the future.

Will we get what we want? The world will warm, and there is no escaping the fact of the Anthropocene that we have landed ourselves and an endless (hopefully) number of future generations in. So, what we can get is circumscribed by the transgression of planetary boundaries, an inexorable constraint on any better future. But within those hard terms lies a range along which humanity will strive to place itself as far in the direction of living differently as possible, living better and closer to our full potential. What seems impossible today might become otherwise, if we are wise enough to let our actions and imaginations emerge together.

### Plan

#### The United States federal government should guarantee degrowth-oriented jobs.

# Case

## Social Good ADV

### JG Solves---2AC

#### A JG would fundamentally restructure the process of economic provisioning.

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This inquiry seeks to establish that a job guarantee (JG) would animate the non-invidious re-creation of community, challenge the hierarchy which permeates social and economic relations, and facilitate an institutional adjustment toward a more inclusive provisioning process. In so doing, the analysis commences by revealing how the current institutional structure fails to provide a non-invidious provision of the material means of life. The first section demonstrates that the institution of ownership and the price system serve as the animating forces which create the inegalitarian power structure effecting unemployment, an inequitable distribution, and hierarchy. After describing the social problem and institutional structure, the analysis considers and extends Hyman Minsky’s proposal for a public employment program. The second section focuses on the institutional implications encouraged by the implementation of a JG, emphasizing the interrelated nature of employment and community, and their role in facilitating institutional adjustment. In drawing on the theory of institutional adjustment, it becomes lucid that community remains integral to the adjustment process, providing space for organizing across historical divisions while encouraging an increased recognition of the interdependence necessary for change. The analysis draws to a close by considering how a JG challenges the dominant and problematic institutions. The ultimate objective of the final section remains illuminating the role of a JG in facilitating a transition toward an inclusive provisioning process: the creation of an institutional structure that reduces hierarchy and domination and promotes equality, diversity, and autonomy, enabling all members of the community to participate in the social provisioning process.

11.1 Social Problems and the Institutional Structure

This analysis begins with a powerful statement made by John Maynard Keynes [1936] (1964, p. 372): it remains the inability to provide full employment and an equitable distribution of wealth that persists as the greatest problems plaguing our capitalist system. Adding to Keynes’s insight, Julie Mathaei and Teresa Amott (1997) assert that the current institutional structure and core economic processes reinforce an economic hierarchy which motivates domination and exploitation of one group over others, extending to nationality, race, gender, and class. Mathaei (1992) suggests that this hierarchy transpires on multiple levels, assumes many forms, and operates through numerous processes. Under the current institutional structure, money has emerged as a primary mechanism which renders power over things, other humans, and nature. Money has become the ultimate symbol of invidious distinction, functioning in accordance with a value system which equates worth with personal attributes and achievements.

The hierarchal power structure pervading society generates an invidious restriction of the material means of life, afflicting large segments of the community. Data from the American Community Survey for the year 2013 confirms that women and historically disadvantaged minorities suffer disproportionately.1 The reported median income in 2013 for minorities ranges from approximately 0.63–0.74 of Whites, while females’ median income was approximately 0.74 of males. And, unemployment for Black or African-American males over the age of 16 remains double that of their White counterpart. The hierarchal power structure does not restrict its animus to only women and minorities; according to Pavlina Tcherneva (2015, p. 2), over the period of 2009–2012, the top one percent received 95 percent of all economic growth, while the top one-tenth of one percent seized 32 percent.

The problems of unemployment, an inequitable distribution, and hierarchy remain best understood in terms of social relations permeated by an inegalitarian power structure. Recognizing this structure leads to an acknowledgement that those who suffer from these problems live in subservience. If society choses to reject this domination, it must consider how to move toward a greater degree of autonomy: what will serve as the catalyst, initiating the non-invidious re-creation of community. According to Murray Bookchin (1971, p. 46), this process must facilitate assembly and community; moreover, it must seek the dissolution of power and hierarchy.

This inquiry now seeks to distinguish the driving forces generating the power structure and hierarchy that plagues society. In so doing, two key institutions require consideration: Thorstein Veblen’s “price system” and private ownership. The price system represents the hegemonic power exercised by business over society: the structure and processes which reinforce hierarchy through the creation of inegalitarian social and economic relations. Whereas the institution of ownership forms the foundation for the ethical consent which justifies the price system’s stranglehold over society and the associated employment and distributional ills.

It was during the rise of the machine era, according to Veblen (1904, p. 66), that the institution of ownership experienced a great change. This change of circumstance permitted the institution of ownership to extend to the public stock of knowledge, most importantly, technology embodied in capital goods. Veblen (1904, p. 77; 1923, pp. 66–67) states that this extension, considered a natural right, vests the owner unqualified power of discretionary idleness: the ability to restrict the community’s access to the material means of life. It remains this “conscientious withdrawal” that, Veblen (1921, pp. 1–7) asserts, ensures business receives a satisfactory income in money terms for the employment of its property in the capitalist production process.

The concentration of ownership, a marked characteristic of modern society, affords business exclusive control over the production process. Veblen (1904, pp. 1–3) notes that through this control, the businessman acts as “the only large self-directing economic factor” and hence “controls the exigencies of life under which the community lives”. The businessman’s enslavement to pecuniary animus spawns his disregard for community while openly pursuing predatory coercion. And it remains the hegemonic position of the price system that facilitates these acts of coercion. Relying upon the Veblenian processes of contamination, emulation, subordination, and mystification, William Dugger (1989) perspicaciously sketches the concomitant process of the emerging corporate hegemony and the hollowing of non-corporate institutions. This control, however, represents a profound dichotomy as there exists a dissociation between the interests of business, narrowly focused on pecuniary gain, and community. Business’s command over industry, with its singular focus on pecuniary gain, expedited the organization of society on the price system.

Coinciding with the rise of the machine and the previously mentioned extension of ownership to the public stock of knowledge, the putative earning capacity, derived from ownership, emerged as the ultimate goal of the price system. Veblen (1921, pp. 4–9, 17) states that realizing the maintenance of reasonable prices relies upon a habitual restriction of the community’s access to the material means of life. Given that business commands industry, it follows that business principles dictate the rate and volume of output without concern for the community. In Veblen’s words, “price is the essence of the case, livelihood is not.” Not only does the price system determine access to the material means of life, but, according to Max Lerner (Veblen and Lerner 1948, p. 26), the price system also dictates social values and furnishes the “cash nexus”, facilitating the association of personal attributes and worth with the ultimate symbol and value of a pecuniary social system.

As the machine process proliferated, there emerged an increasingly important role for business relations to maintain the functioning of the interrelated subsystems that constitute the economic process. This new agency for the owners of the sub-processes allows them to induce a differential advantage, achieved with an alteration of values, through manipulation of relations and transactions. Of particular interest remains the continuation, albeit in a transformed manner, of inegalitarian power relations based on gender, race, nationality, and social standing. According to Matthaei (1999, p. 598), a new form of hierarchy has emerged which no longer remains characterized by rigid divisions, particularly along gender lines. However, traditionally masculine activities, although now more freely accepting of women (especially those with class and/or race privilege), continue to receive higher valuation than traditionally feminine activities. At the core of these processes remains a struggle to dominate others in the economic hierarchy.

When the institutional structure, according to Paul Bush (1987, p. 158), fails to provide a non-invidious provision of the material means of life to the community, social problems arise. And solutions to social problems rely on progressive institutional change, change which contributes to the continuity of life. Marc Tool (1979, p. 293) adds that progressive institutional change facilitates the non-invidious re-creation of community. Thus, progressive institutional change does not accept the equating of worth with personal attributes and achievements: progressive institutional change rejects hierarchy and promotes inclusion throughout the community.

11.2 Employment and Community

According to J. Fagg Foster [1948] (1981, p. 930), addressing social problems, like those described in the first section, necessarily involves an institutional adjustment. Foster’s theory of institutional change operates within an institutionally defined space, requires deliberate choice by members of the community, and must not displace non-problematic institutions. In what follows, the analysis seeks to establish that a JG would not only address unemployment and distributional problems, but would serve to restore community. Community exists as the institutional space that will promote a recognized interdependence and create social relations capable of subverting the price system’s hierarchal structure, facilitating a transition toward a more inclusive provisioning process.

Minsky (1965, 1973, [1986] 2008) emphasized the need for a JG to effectively combat poverty, sustain effective demand and to constrain economic instability. Minsky’s proposal contains four key features: exogenously determined compensation, no means test for employment, permanent status with voluntary participation, and federally funded while locally implemented (i.e. a decentralized administration). David Brady (2003, p. 392) and Isabel Sawhill (1988, pp. 1110–1112) both find evidence that unemployment serves as a primary cause of poverty. William Mitchell and Joan Muysken (2008) come to the palpable conclusion that the best approach to alleviating unemployment involves increasing employment rather than addressing supply-side issues. By simply offering a job to anyone willing and able to work, the greatest structural challenge—a shortage of jobs—in confronting poverty would cease to exist. And, according to Minsky (1965), targeted spending through direct job creation facilitates the greatest primary and secondary effects in combating poverty.

The current approach to generating employment relies upon inducing investment through the special treatment of capital income. Not only, Minsky (1973) notes, does this special treatment amplify instability, but according to a Congressional Research Service report by Thomas Hungerford (2011), the rising share of capital income served as the greatest contributor to the increasing inequality over the first decade of the twenty-first century. Utilizing direct job creation would allow policy makers to abandon the special treatment that capital income currently receives. The public employment strategy would increase stability while simultaneously reducing a key component stimulating inequality.

Extending Minsky’s analysis provides additional insight into the role of a JG in animating a transition toward a more inclusive provisioning process. Drawing on the ideas of inclusive democracy as developed by Takis Fotopoulos (1997), participatory economics as presented by Robin Hahnel (2012) and Michael Albert (2003) and the feminist economic ideas of Matthaei (1999) lead to a vision of society that rejects hierarchy and aims at the elimination of domination through the creation of an institutional structure that promotes equality, diversity, autonomy and strives to include all members of the community in the social provisioning process.

The potential impact to the community of a JG extends beyond the provision of employment; in fact, Minsky’s proposal allows for great secondary impacts to propagate throughout the community. A JG affords opportunities which coincide directly with key community building concepts as put forward by Gar Alperovitz, David Imbroscio, and Thad Willamson in their 2002 book Making Place for Community. By taking workers where they are and as they are, a JG ensures a strong economic presence in underdeveloped communities plagued by unemployment. This presence acts as a form of anchoring; according to Alperovitz et al. (2002, p. 68), anchored communities tend to display greater stability. Long term stability in JG-anchored communities derives from a decreased reliance on private investment to drive economic development. While in the short term, stability arises from the support provided to local businesses, encouraging the development of local linkages. The decentralized administration of a JG would further stimulate local linkages, as a community-based decision-making process should enhance support of local firms and cooperatives. It follows that a JG would greatly diminish the community’s dependence on the exigencies of the market in pursuit of the material means of life.

In accordance with Veblen, John Curl (2012, pp. 2–3, 246, 354) states that, coinciding with the rise of the machine, there began a transformation that forced the “free” population into wage slavery. Utilizing a JG to support development of cooperatives (co-ops) would contribute to a reversal of that transformation, aiding restoration of community and reducing hierarchy. According to Curl, cooperatives offer an alternative to wage slavery through facilitating a re-organization of life on a different basis, subverting the typical hierarchal structure and precarious employment generated under the price system. Moreover, a JG can empower co-ops to provide public works and services that benefit the locality. The organizational structure of co-ops promotes a bottom-up inclusive process in both work and community, directly contradicting the top-down structure of the price system which marginalizes those who do not fit. Indubitably, this bottomup process remains better suited to provide for the needs of people.

The impact of community economic stability contains grand implications. Alperovitz et al. (2002, pp. 2–7) note that a robust economic foundation enhances the communities’ social capital, bolsters cultural worth, and affords social validation. Additionally, an economically vigorous community will foster inclusiveness of diverse political interests, especially at the local level, animating a tendency toward a great social leveling. Developing stable geographic communities would provide space for organizing across historical divisions. Moreover this space, in accordance with Foster’s (1981, p. 933) principles of institutional adjustment, would increase a recognition of the interdependence of community members, facilitating a transition away from the price system.

Returning to Dugger’s analysis, it illuminates how a JG would not only end unemployment but also serve to restore the hollowing institution of community: a JG would provide substance by engaging individuals in activities which surpass the mere pursuit of pecuniary gain. A JG would not only serve to restore community but simultaneously facilitate resistance to hegemony. Restoring community would strengthen and protect its independent functioning, a key component of promoting a pluralist culture. According to Dugger (1989, pp. 1–5), a pluralist culture consists of a multitude of independent institutions, serving to promote a synthesis of values and beliefs. The diversity involved in a pluralist culture creates individual will and strengthens character. Pluralism animates the process of freedom—the freedom from conformity and the freedom to stimulate individual maturity. Hence, a JG affords great potential in restoring the institution of community, encouraging resistance to corporate hegemony.

In a 2010 article, Jon Wisman (p. 46) suggests that the hollowing out of the institution of community leads to increased withdrawal from social activities. Further reinforcing this argument, Amartya Sen (1997, p. 161) adopts a broad view of poverty, facilitating an understanding of the nature of deprivation resulting from unemployment. Sen states that unemployment predisposes people to social exclusion. This marginalization encompasses economic activities as well as participation in community life and political processes. Considering the extent of the deprivation initiated by unemployment, it becomes lucid that the restorative ability of a JG to the community extends beyond the mere provision of employment.

Drawing on the ideas of Bookchin (1993, pp. 48–50) and his portrayal of community under Confederalism illustrates the importance of community in challenging the existing power structure. For Bookchin, communities compromise a local, interdependent public space which facilitates active participation in social processes. Active participation encourages an inclusive, bottom-up power structure that, according to James Scott (2012, p. xii, 19), promotes cooperation without hierarchy. This structure involves “informal, self-organized, and transient networks of neighborhood, work, and family that lie outside the formal institutions of politics”.

Experiences from previous public employment programs serves to illustrate the actual impact beyond the provision of employment to the community. The New Deal Programs influenced community life through the arts and provision of a host of public goods and necessities. The numerous alphabet programs of the New Deal served to engage community and individuals outside the realm of the price system. An example provided by Curl (2012, pp. 315–322) describes the formation of new co-ops and assistance to existing co-ops. Moreover, Curl depicts how New Deal programs actually went beyond influencing community, directly creating 99 new communities, housing approximately 50,000 residents with the New Deal homestead colony program. While, according to Tcherneva and L. Randall Wray (2007), the Jefes program in Argentina included projects specifically designed to address community needs, including construction of new or renovation of existing community centers and provision of imperative services like food kitchens, family attention centers, and health promotion programs. Furthermore, reliance on a decentralized administration facilitated the Jefes program to address the most pressing needs of communities. Beyond providing needed services to communities, Jefes greatly enhanced civic participation, drawing people from a broad range of social strata into political processes. Although these programs were historically specific, it remains clear that there exists huge potential for a JG to contribute to the restoration of the community, enhancing community life and social cohesion.

Tcherneva and Wray (2007, pp. 24–25) note another very interesting result from the Jefes experience: the contribution toward redefining the meaning of work. A principal accomplishment in challenging the price system and the associated patriarchal processes emerged with the vitiation of the preconception that traditionally unpaid activities (typically associated with feminine roles) are unproductive. This bias clearly stems from the subordination of society to the primacy of the price system, the contamination by pecuniary values, and the continued existence of patriarchal institutions. The provision of paid employment for “unproductive work” not only challenges historic patriarchal tendencies and the primacy of the price system, but serves to strengthen community. According to John Budd (2011, Chaps. 7 and 8), the prevailing conceptualization of work derives from social institutions and the associated power nexus. Thus, redefining work in and of itself serves as a challenge to dominant institutions. However, when considering that this work often entails community oriented goals and/or traditionally feminine activities, it becomes cogent that extending the conceptualization of work into this sphere provides additional substance, meaning, and value—key sources of institutional resistance—to community, inciting a challenge to the hegemony and hierarchy which marks the current institutional structure.

Mathew Forstater (2013, Chap. 6) describes how Municipal Confederalism can serve as a framework for a JG. In so doing, Forstater posits the importance of work for human development, claiming it exists as an integral component of human experience. Indubitably, unemployment denies this opportunity, whereas Albert (2003, p. 104) notes that the hierarchal organization under the price system disparately empowers a select few, further reinforcing hierarchy through class, gender, and racial divisions. Both Forstater and Albert contend that the organization of work can serve to balance this integral component of human experience. A JG, through its capacity to operate outside the realm of the price system, can organize work so that it empowers all, regardless of any demarcation, equally.

11.3 Ownership and the Price System

Dugger (1989, pp. 53–54) states that the hegemonic culture encourages whatever means necessary to achieve a given end, emphasizing ends over means. Within the current institutional structure, a shortsighted, narrow view of profit maximization dominates. Not only does this approach serve to hollow out the non-corporate institutions (family, school, union, church, community, state, and mass media) but, according to Forstater (1999, pp. 7–8), requires maintaining flexibility—an ability to adapt to changing circumstances. The permanence of unemployed resources, including most notably labor power, enables maintenance of the desired flexibility. Forstater states that system flexibility facilitates an expansion of capital accumulation by attenuating structural rigidities. Indubitably, this flexibility benefits the businessman and corporation at the expense of the community.

In accordance with Veblen (1904, pp. 286–287) and Dugger (1989, p. 8), who both observed that the state serves as an instrument of domination, Forstater (1999, p. 8) asserts that flexibility, maintained through politically forced unemployment, occasions unnecessary and unacceptable economic and social costs to the community. The narrow criteria dictating economic decisions in the private sector does not harmonize with the broader well-being of the community. And only the government, through its ability to divorce the employment decision from the profit constraint, possesses the unique capacity to place means in their proper relationship to ends in the social-economic processes of a capitalist system. A monetarily sovereign government possesses the means; what the state lacks, however, remains the will.

In Veblen’s analysis, the state acts chiefly to represent the interests of business, and according to Dowd (1966, pp. 132–134), state power remains the expression of those dominant interests. Furthermore, Veblen (1904, pp. 286–287) notes that this subservience to business interests remains unchallenged as the community naïvely believes that their material welfare coincides with the pecuniary pursuits of business. And, according to Colin Ward (1973, p. 12), it remains this subscription to business values by the community that allows the unchallenged domination of business over society. The subreption of business values, Dowd (1966, pp. 105, 134) states, has gone so far as to become accepted unthinkingly. Yet, social wellbeing does not necessarily parallel business propositions. Dowd expands upon this discord by considering the propensity for emulation, that a virtual enshrinement of businessmen substantiates the fashioning of politics in their image. This fashioning undoubtedly contributed to the price system emerging as a dominant influence in the socio-economic process. In the concluding pages of Absentee Ownership, Veblen (1923, pp. 442–445) reaffirms the primacy of the price system and its subreption of the state, asserting that the state remains a predatory fraternity with a reverence for applying business principles to socio-economic problems. And, in Veblen’s (1904, p. 379) own words, “[t]he question, therefore, remains, on the whole, a question of what businessmen may be expected to do for cultural growth on the motive of profits.”

Regardless of the dominance assumed by the price system, according to Lerner (Veblen and Lerner 1948, p. 27), Veblen’s theory of power stresses that it remains the community which exhibits the disposition for slaughter. It follows that there exists a recognized interdependence in the institutional adjustment brought about by implementing a JG. This interdependence, according to Foster (1981, p. 933), implies that a deliberate choice must be made by those who are to break with previous behaviors. This break will first require a recognition on the part of the community that the inalienable rights of pecuniary obligation and ownership as defined during the eighteenth century, no longer, as Veblen [1919] (2002, p. 112) observed, safeguard the “rule of Live and Let Live”. And secondly, the ensuing institutional adjustment, according to Marc R. Tool (2000, p. 202), must be readily adapted into the existing institutional structure, only displacing the non-instrumental functions of problematic structures. A JG would not completely displace the price system nor the market where it conducts its business. Rather, implementing a JG functions in accordance with Foster’s principle of minimal dislocation; as Minsky (2008, p. 112) noted, the market mechanism suffices in making unimportant social decisions (i.e. decisions like those regarding ice cream flavors). However, Minsky asserts that the market consistently yields undesirable results on important issues, most notably, maintaining economic stability, capital development, and education and training.

A JG serves as an initial step toward the realization of an inclusive provisioning process. According to Veblen (2002, pp. 111–114), this realization requires displacing the vested interests legitimate right in “getting something for nothing”. While a JG does not completely dispose of this feature, it does present a formidable challenge to the interpretation of the principal “inalienable right”, which motivates it: ownership. Ownership, specifically of the means of production and the technology embodied within it, confers the right to the vested interests to control economic activity: to restrict the community’s access to the material means of life.

Through decentralized administration, a JG places a portion of the means of production under demotic control of the community, initiating a re-appropriation of the material means of life. This re-appropriation of the means of production, however, does not result in a redistribution of ownership as understood under the price system. Rather, the re-appropriation affords the community the power to determine user rights. Drawing from the work of Hahnel (2012, pp. 21–32, 46) enables this analysis to consider how communal “ownership” of the means of production promotes an egalitarian outcome. First, communal ownership maximizes the benefit afforded to the community via the power to decide which tasks are undertaken: it transfers power to community, facilitating the community to meet its most pressing needs uninhibited by pecuniary motives. Second, a JG would address a grave flaw in the contribution-based maxim underlying the current distributional structure—the punishment of those whom remain unable to find employment (i.e. unable to contribute) due to a lack of jobs. The redistribution of ownership and improved distributional structure serve to increase economic justice—moving toward a distribution of economic benefit more closely paralleling the degree of effort and personal sacrifice expended.

It has been established that a JG challenges the price system by engaging people outside of its realm. According to Hahnel (2012, pp. 13–15), there exist four fundamental activities within any organization of the provisioning process; thus, any transition away from the current organization toward a more inclusive process must address these four key components. The inquiry now seeks to establish how a JG addresses these components, while also promoting key elements of citizenship, which, according to Fotopoulos (1997, pp. 216–217), remain integral in achieving an inclusive provisioning process.

The first two aspects, both restricted by the profit constraint and dictated by the price system, concerns decisions regarding the organization of work and production. Furthermore, Joan Acker (2006, p. 441) states that a great deal of the economic and social inequality originates with the organizing and daily activities of work. In contrast, decisions defining the organization of work and production inside the JG transpire independent of the profit constraint and outside the realm of the price system. Thus, organization under a JG can place means in the proper relations to ends, con- sidering the impact to community while specifically designing jobs and projects to reduce hierarchy. Distribution, traditionally based on the contribution maxim, would no longer exclude the unemployed as a JG ensures anyone who is willing and able to work has the opportunity to do so. Moreover, a JG presents a serious challenge to the institution of ownership which serves to substantiate this maxim. The exogenously determined compensation can ensure satisfaction of basic needs, a critical component of social citizenship. The gradual shift of control over the means of production would benefit the community; specifically, it would afford the community greater autonomy over the material means of life. This structure of demotic ownership serves as an integral component of economic citizenship uninhibited by inegalitarian power relations. Finally, with concern to the allocation of resources—the distribution of burden and benefits— a JG would increase participation across a broad spectrum of society in the allocation decision through its decentralized administration. This increased participation would grant the community greater influence over allocation and represents the final element of Fotopoulos’s (1997) economic citizenship.

It follows that a JG addresses the four key activities while engaging individuals outside the realm of the price system and promoting active citizenship, thus facilitating an increased space for autonomy and expression while reducing marginalization. According to Hahnel (2012, pp. 90–91), this increased autonomy would animate a transition toward a more participatory process. However, the need for a broader view of the ultimate goals of the transition process and contributions from a JG requires further explication. Under the current institutional structure, hierarchy (including class, racial, and gender demarcations) stems principally from the institution of ownership. In accordance with Hahnel (2012, pp. 13–19), an ultimate goal of a JG-driven transition toward an inclusive provisioning process remains the creation of a non-hierarchal community. However, Ward (1973, p. 24) notes that the concentration of power, stemming from the hegemony of the price system and the institution of ownership, serves as the primary obstacle to progressive social change. In challenging the price system, a JG directly contests the foundation of hierarchy and the ultimate obstacle to progressive social change—the institution of ownership. Furthermore, a JG affords greater economic democracy: a JG extends decision making power to those affected to a greater degree. An emphasis on communization of the economic process and development of local linkages will indubitably paral- lel a rise in solidarity—concern for the well-being of others. And ultimately, a JG would facilitate greater economic justice as economic reward would no longer exclude the members of the population for which no jobs exist.

11.4 Conclusion

This inquiry has sought to establish that a JG would animate a non-invidious re-creation of community, challenge the hierarchy which penetrates society on many levels, and facilitate an institutional adjustment toward a more inclusive provisioning process. In so doing, the analysis depicted how the current institutional structure fails to provide a non-invidious provision of the material means of life. The first section established that the institution of ownership and the price system serve as the driving forces behind the inegalitarian power structure that propagates unemployment, an inequitable distribution, and hierarchy. After describing the social problem and institutional structure, the analysis considered and extended Hyman Minsky’s proposal for a public employment program. The second section focused on the institutional implications brought about by the implementation of a JG, emphasizing the restoration of community and its role in subverting the dominant and problematic institutions. In drawing on Foster’s theory of institutional adjustment, it became lucid that community and work exist as integral elements in the adjustment process, providing space for alternative social relations and encouraging a recognized interdependence. The analysis drew to a close by considering challenges presented by a JG to the institution of ownership and the price system. The final section illuminated the role of a JG in transition toward an inclusive provisioning process: the creation of an institutional structure that reduces hierarchy and domination and promotes equality, diversity, and autonomy, providing opportunity for all members of the community to participate in the social provisioning process.

### JG Solves---Unempoloyment

#### Job guarantee eliminates unemployment.

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A job guarantee would deliver tight full employment, so that only those who chose to remain outside the programme while temporarily between jobs were unemployed at all. This frictional unemployment would probably make up not much more than 1% of the labour force, and certainly less than 2%. There would be virtually no discouraged workers, and there would be no involuntary part-time employment, so that this target of 1–2% at the most for unemployment can be interpreted as a target for U6 unemployment, rather than the current headline measure.

It is an artefact of general equilibrium models that unemployment is caused by a lack of incentives to work, or by the characteristics of unemployed workers. This is fundamentally misleading and precludes any serious discussion of a job guarantee. There are echoes of Minsky’ prince here, constrained by the theories of his intellectuals, and precluded from even asking important questions about policy. It was a failure to implement a job guarantee as an institutional mechanism for sustainable full employment which contributed to the stagflation of the 1970s, the mass unemployment of the 1980s, and economic insecurity for millions in an increasingly unequal society in more recent times.

A Neo-Keynesian pump priming approach, matched with growing public-sector employment, was successful in achieving and maintaining something close to full employment in a large number of countries over the period from the 1940s to the early 1970s. However, as Hyman Minsky identified, its relative success was due to social and institutional factors which were likely to evolve in such a way as to make pump priming more inflationary, and the stop-go policy cycle more problematic. In addition, an untargeted stimulus to total spending is liable to benefit disproportionately those with higher levels of income and better employment prospects, and is unlikely to benefit the most disadvantaged and those most likely to remain long-term unemployed.

An employment guarantee scheme, on the other hand, would benefit those who most need the help. It would lead to the right amount of net government spending in the right locations; it should be less inflationary and have better ecological consequences; and it would eliminate involuntary unemployment. The unemployed could be hired as and where they are, at an equitable floor social wage, so that the willing workers that the private sector does not employ would be offered employment and training until such time as private-sector expansion drew them back out of the job guarantee scheme, and into the privately employed labour force (Mitchell and Fazi 2017).

### JG Solves---Renewables

#### Enables rapid clean energy transition

Mark Diesendorf 22, has a BSc with first class honours in physics from the University of Sydney and a PhD in applied mathematics from UNSW, “Energy Systems for Sustainable Prosperity,” Sustainability and the New Economics: Synthesising Ecological Economics and Modern Monetary Theory, edited by Stephen J. Williams and Rod Taylor, Springer International Publishing, 2022, pp. 231–251, Springer Link, doi:10.1007/978-3-030-78795-0\_12

6 Discussion and Conclusion

A global ecologically sustainable energy system, based on renewable energy, energy efficiency and energy conservation, is technically and economically feasible and could replace all fossil fuel extraction and use. In this system, the vast majority of energy would be produced and used as electricity from wind, sunshine and water. The remainder awaits further development of technologies to reduce the costs of producing gaseous and/or liquid fuels from renewable electricity for air and sea transportation and non-energy industrial processes.

The current situation is that many countries and smaller regions have achieved annual average electricity generation of 50–100% (or more) from renewable electricity. In a large fraction of these places, variable renewables are the major source (Table 12.1). However, the percentages of renewables are much less considered relative to total energy use. Also, many towns, commercial operations and industries have embarked on that pathway: for instance, Australia’s capital city, Canberra, now runs on 100% net renewable electricity, mostly wind and solar, and has policies to encourage the electrification of transport. The global market for EVs is expected to expand rapidly from the mid-2020s onwards as battery prices continue to fall and emissions limits or bans are placed on new ICE vehicles. However, progress in expanding the electrification of non-electrical heating has so far been slow almost everywhere in the world.

Continuing cost reductions in wind and solar power, and storage technologies, together with widespread concern about climate change, are making the transition unstoppable. The resulting sustainable energy system could play the major role in mitigating human-induced climate change, provided it is implemented rapidly across the whole world. Because wind and solar technologies are mass produced, they can be rolled out much more rapidly than fossil fuelled or nuclear technologies. Wind and solar farms can be planned and built in 2–3 years. Utility scale batteries can be manufactured and installed in less than a year. Residential rooftop solar systems and energy efficiency technologies are installed in a single day or less. Given the political will, the rate of growth of sustainable energy could be greatly increased. Modern Monetary Theory (see Chap. 14) argues that financial capital is generally no obstacle. The fact that many countries, including most of the larger economies, have committed to net zero emissions by 2050 or so, is encouraging, but substantial reductions on a global scale are needed over the coming decade rather than the promise of big reductions later.

We have collectively wasted critical decades, thanks to a well-orchestrated disinformation campaign. Fossil fuel industries and other big GHG emitters are still exerting strong pressure on governments to delay action, by direct lobbying, political donations, jobs for retiring politicians and influence on the mass media to cast doubt on climate science and renewable energy technologies. Despite these pressures, public opinion generally favours the energy transition. In countries with a nominally democratic system of government where vested interests are politically powerful (e.g. the USA, Australia, Poland, South Africa, Canada, Brazil), stronger community action is needed to push governments to address the above pressures that are potential sources of corruption undermining democratic decision-making (Diesendorf 2021). Global energy demand continues to grow, except during the coronavirus pandemic, driven mainly by growing economies and the growing global population. Energy demand growth, most of which is still fossil fuelled, is slowing the rate at which renewable energy can catch up with demand and energy efficiency can reduce demand. At the current rate of demand growth, irreversible climate change, i.e. where tipping points are reached, could arrive before a global sustainable energy system. Therefore, energy demand and consumption in general must be curtailed while energy is transitioned to renewables.

### Inequality Impact---AT: Defense

#### Inequality turns every other impact, including existential terror.

Luke Kemp 19, Researcher based at the Centre for the Study of Existential Risk (CSER) at the University of Cambridge, “Are we on the road to civilization collapse?” 02/19/19, http://www.st-stanislaus-gy.com/Academics/Topics/CollapseOfCivilization.pdf

Our deep past is marked by recurring failure. As part of my research at the Centre for the Study of Existential Risk at the University of Cambridge, I am attempting to find out why collapse occurs through a historical autopsy. What can the rise and fall of historic civilisations tell us about our own? What are the forces that precipitate or delay a collapse? And do we see similar patterns today?

The first way to look at past civilisations is to compare their longevity. This can be difficult, because there is no strict definition of civilisation, nor an overarching database of their births and deaths.

In the graphic below, I have compared the lifespan of various civilisations, which I define as a society with agriculture, multiple cities, military dominance in its geographical region and a continuous political structure. Given this definition, all empires are civilisations, but not all civilisations are empires. The data is drawn from two studies on the growth and decline of empires (for 3000-600BC and 600BC-600), and an informal, crowdsourced survey of ancient civilisations (which I have amended).

Collapse can be defined as a rapid and enduring loss of population, identity and socioeconomic complexity. Public services crumble and disorder ensues as government loses control of its monopoly on violence.

[[IMAGE OMITTED]]

Virtually all past civilisations have faced this fate. Some recovered or transformed, such as the Chinese and Egyptian. Other collapses were permanent, as was the case of Easter Island. Sometimes the cities at the epicentre of collapse are revived, as was the case with Rome. In other cases, such as the Mayan ruins, they are left abandoned as a mausoleum for future tourists.

What can this tell us about the future of global modern civilisation? Are the lessons of agrarian empires applicable to our post-18th Century period of industrial capitalism?

I would argue that they are. Societies of the past and present are just complex systems composed of people and technology. The theory of “normal accidents” suggests that complex technological systems regularly give way to failure. So collapse may be a normal phenomenon for civilisations, regardless of their size and stage.

We may be more technologically advanced now. But this gives little ground to believe that we are immune to the threats that undid our ancestors. Our newfound technological abilities even bring new, unprecedented challenges to the mix.

And while our scale may now be global, collapse appears to happen to both sprawling empires and fledgling kingdoms alike. There is no reason to believe that greater size is armour against societal dissolution. Our tightly-coupled, globalised economic system is, if anything, more likely to make crisis spread.

[[IMAGE OMITTED]]

If the fate of previous civilisations can be a roadmap to our future, what does it say? One method is to examine the trends that preceded historic collapses and see how they are unfolding today.

While there is no single accepted theory for why collapses happen, historians, anthropologists and others have proposed various explanations, including:

CLIMATIC CHANGE: When climatic stability changes, the results can be disastrous, resulting in crop failure, starvation and desertification. The collapse of the Anasazi, the Tiwanaku civilisation, the Akkadians, the Mayan, the Roman Empire, and many others have all coincided with abrupt climatic changes, usually droughts.

ENVIRONMENTAL DEGRADATION: Collapse can occur when societies overshoot the carrying capacity of their environment. This ecological collapse theory, which has been the subject of bestselling books, points to excessive deforestation, water pollution, soil degradation and the loss of biodiversity as precipitating causes.

INEQUALITY AND OLIGARCHY: Wealth and political inequality can be central drivers of social disintegration, as can oligarchy and centralisation of power among leaders. This not only causes social distress, but handicaps a society’s ability to respond to ecological, social and economic problems.

The field of cliodynamics models how factors such as equality and demography correlate with political violence. Statistical analysis of previous societies suggests that this happens in cycles. As population increases, the supply of labour outstrips demand, workers become cheap and society becomes top-heavy. This inequality undermines collective solidarity and political turbulence follows.

COMPLEXITY: Collapse expert and historian Joseph Tainter has proposed that societies eventually collapse under the weight of their own accumulated complexity and bureaucracy. Societies are problem-solving collectives that grow in complexity in order to overcome new issues. However, the returns from complexity eventually reach a point of diminishing returns. After this point, collapse will eventually ensue.

Another measure of increasing complexity is called Energy Return on Investment (EROI). This refers to the ratio between the amount of energy produced by a resource relative to the energy needed to obtain it. Like complexity, EROI appears to have a point of diminishing returns. In his book The Upside of Down, the political scientist Thomas Homer-Dixon observed that environmental degradation throughout the Roman Empire led to falling EROI from their staple energy source: crops of wheat and alfalfa. The empire fell alongside their EROI. Tainter also blames it as a chief culprit of collapse, including for the Mayan.

EXTERNAL SHOCKS: In other words, the “four horsemen”: war, natural disasters, famine and plagues. The Aztec Empire, for example, was brought to an end by Spanish invaders. Most early agrarian states were fleeting due to deadly epidemics. The concentration of humans and cattle in walled settlements with poor hygiene made disease outbreaks unavoidable and catastrophic. Sometimes disasters combined, as was the case with the Spanish introducing salmonella to the Americas.

RANDOMNESS/BAD LUCK: Statistical analysis on empiressuggests that collapse is random and independent of age. Evolutionary biologist and data scientist Indre Zliobaite and her colleagues have observed a similar pattern in the evolutionary record of species. A common explanation of this apparent randomness is the “Red Queen Effect”: if species are constantly fighting for survival in a changing environment with numerous competitors, extinction is a consistent possibility.

Despite the abundance of books and articles, we don’t have a conclusive explanation as to why civilisations collapse. What we do know is this: the factors highlighted above can all contribute. Collapse is a tipping point phenomena, when compounding stressors overrun societal coping capacity.

We can examine these indicators of danger to see if our chance of collapse is falling or rising. Here are four of those possible metrics, measured over the past few decades:

[[IMAGE OMITTED]]

Temperature is a clear metric for climate change, GDP is a proxy for complexity and the ecological footprint is an indicator for environmental degradation. Each of these has been trending steeply upwards.

Inequality is more difficult to calculate. The typical measurement of the Gini Index suggests that inequality has decreased slightly globally (although it is increasing within countries). However, the Gini Index can be misleading as it only measures relative changes in income. In other words, if two individuals earning $1 and $100,000 both doubled their income, the Gini would show no change. But the gap between the two would have jumped from $99,999 to $198,000.

Because of this, I have also depicted the income share of the global top 1%. The 1% have increased in their share of global income from approximately 16% in 1980 to over 20% today. Importantly, wealth inequality is even worse. The share of global wealth from the 1% has swelled from 25-30% in the 1980s to approximately 40% in 2016. The reality is likely to be starker as these numbers do not capture wealth and income siphoned into overseas tax havens.

Studies suggest that the EROI for fossil fuels has been steadily decreasing over time as the easiest to reach and richest reserves are depleted. Unfortunately, most renewable replacements, such as solar, have a markedly lower EROI, largely due to their energy density and the rare earth metals and manufacturing required to produce them.

This has led much of the literature to discuss the possibility of an “energy cliff” as EROI declines to a point where current societal levels of affluence can no longer be maintained. The energy cliff need not be terminal if renewable technologies continue to improve and energy efficiency measures are speedily implemented.

Measures of resilience

The somewhat reassuring news is that collapse metrics are not the entire picture. Societal resilience may be able to delay or prevent collapse.

For example, globally “economic diversity” – a measurement of the diversity and sophistication of country exports – is greater today than it was in the 1960s and 1970s, as measured by the Economic Complexity Index (ECI). Nations are, on average, less reliant on single types of exports than they once were. For example, a nation that had diversified beyond only exporting agricultural products would be more likely to weather ecological degradation or the loss of trading partners. The ECI also measures the knowledge-intensity of exports. More skilled populations may have a greater capacity to respond to crises as they arise.

Similarly, innovation – as measured by per capita patent applications– is also rising. In theory, a civilisation might be less vulnerable to collapse if new technologies can mitigate against pressures such as climate change.

It’s also possible that “collapse” can happen without violent catastrophe. As Rachel Nuwer wrote on BBC Future in 2017, “in some cases, civilisations simply fade out of existence – becoming the stuff of history not with a bang but a whimper”.

Still, when we look at all these collapse and resilience indicators as a whole, the message is clear that we should not be complacent. There are some reasons to be optimistic, thanks to our ability to innovate and diversify away from disaster. Yet the world is worsening in areas that have contributed to the collapse of previous societies. The climate is changing, the gap between the rich and poor is widening, the world is becoming increasingly complex, and our demands on the environment are outstripping planetary carrying capacity.

The rungless ladder

That's not all. Worryingly, the world is now deeply interconnected and interdependent. In the past, collapse was confined to regions – it was a temporary setback, and people often could easily return to agrarian or hunter-gatherer lifestyles. For many, it was even a welcome reprieve from the oppression of early states. Moreover, the weapons available during social disorder were rudimentary: swords, arrows and occasionally guns.

Today, societal collapse is a more treacherous prospect. The weapons available to a state, and sometimes even groups, during a breakdown now range from biological agents to nuclear weapons. New instruments of violence, such as lethal autonomous weapons, may be available in the near future. People are increasingly specialised and disconnected from the production of food and basic goods. And a changing climate may irreparably damage our ability to return to simple farming practices.

Think of civilisation as a poorly-built ladder. As you climb, each step that you used falls away. A fall from a height of just a few rungs is fine. Yet the higher you climb, the larger the fall. Eventually, once you reach a sufficient height, any drop from the ladder is fatal.

With the proliferation of nuclear weapons, we may have already reached this point of civilisational “terminal velocity”. Any collapse – any fall from the ladder – risks being permanent. Nuclear war in itself could result in an existential risk: either the extinction of our species, or a permanent catapult back to the Stone Age.

While we are becoming more economically powerful and resilient, our technological capabilities also present unprecedented threats that no civilisation has had to contend with. For example, the climatic changes we face are of a different nature to what undid the Maya or Anazasi. They are global, human-driven, quicker, and more severe.

#### Pervasive inequality is an existential risk.

Jacob Ainscough et al. 21, Jacob Ainscough, Research Assistant, Centre for the Study of Existential Risk, University of Cambridge; Alex McLaughlin, Research Associate, Centre for the Study of Existential Risk, University of Cambridge; Luke Kemp, Lecturer in International Relations and Environmental Policy, Australian National University; Natalie Jones, Research Associate, Centre for the Study of Existential Risk, University of Cambridge, “Earth’s existential threats: inequality, pandemics and climate change demand global leadership,” The Conversation, 2/23/21, https://theconversation.com/earths-existential-threats-inequality-pandemics-and-climate-change-demand-global-leadership-154325

Asked in 2003, the UK’s astronomer royal, Martin Rees, gave our present society 50/50 odds of lasting until the end of the century. It’s fair to say the odds haven’t improved in the years since he made this call. The planet is warming, a pandemic runs wild, the threat of nuclear war still hangs overhead and emerging technologies are allowing for the development of new weapons of mass destruction. Existential threats to human existence are growing – and the time left to address them gets ever shorter.

So the new presidential term in the world’s most powerful nation takes on a special significance. The Biden-Harris administration cannot tackle the global challenges we face alone, but the US will be pivotal to efforts to wind back the doomsday clock. Joe Biden made his agenda clear in a short passage of his inaugural speech:

A once-in-a-century virus silently stalks the country … A cry for racial justice, some 400 years in the making, moves us … A cry for survival comes from the planet itself … The rise of political extremism, white supremacy, domestic terrorism, that we must confront, and we will defeat.

After the Trump years, these new political commitments from the world’s dominant power are welcome. Yet this rhetoric reveals a flaw in Biden’s conception of the threats facing the world. Each issue is treated as a distinct challenge. But our research on catastrophic risks reveals that such threats are actually deeply interconnected. Threats facing humanity are a many-headed Hydra – they are all parts of the same beast.

Threat and inequality

The catastrophic risks are held together by a sinew of racial, gender, economic and political inequalities that simultaneously exacerbate each threat and block potential action to address them. Take the climate crisis. Desertification, land degradation and extreme weather disproportionately affect the world’s poorest countries and are estimated to have increased international inequality by 25% in the past 50 years.

But inequality also drives climate change. The richest 10% of the global population are responsible for more than 52% of all emissions. Globally, carbon dioxide emissions track GDP growth with remarkable tenacity.w

Higher inequality means less of the benefits of growth accrue to those at the bottom. More growth, and therefore emissions, are then required to meet the material needs of the world’s population. Meanwhile the fossil fuel industry has stymied action with its constant lobbying and sowing of doubt about the connection between fossil fuels and climate change. These factors together threaten to lock us into a downward spiral of worsening inequality and climate breakdown.

A similar story can be told about other threats. The COVID-19 pandemic has exacerbated inequalities both between and within countries. Social distancing is made more difficult the further down the economic scale you are. And access to vaccines seems to follow the same pattern, especially on an international scale.

Or consider artificial intelligence (AI). The increasing capabilities of AI technologies pose a threat to the global political order. These include the use of facial recognition to empower surveillance states, worsening disinformation, the large-scale use of lethal autonomous weapons (killer robots) and – more speculatively and long-term – the potential development of an “artificial general intelligence” as smart and capable as humans, with all the dystopian possibilities that conjures up. Big tech firms such as Google and Facebook have a disproportionate influence in the development and regulation of many of these technologies and applications. This has allowed them to monopolise the benefits while passing the risks on to everyone else.

### Inequality Impact---Turns Growth

#### Wealth concentration is driving financialization and system collapse.

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1 Introduction

A few secular trends have emerged in the U.S. economy over the last four decades. Each of these secular trends may not be consistent with the implications of the neoclassical balanced growth with stable parameters, and can be considered undesirable for macroeconomic stability. First, real wage growth has stagnated behind productivity growth over the last four decades and, as a result, the labor income share has steadily declined.1 If the real wage growth is the best measure of improvement in living standards, the decline of labor share can be considered an undesirable trend for the welfare of the majority of households.

Second, the before-tax profit share of U.S. corporations has shown a dramatic increase in the last few decades. If the rise of the profit share is due to a growing concentration of U.S. industries and the rise of prices over production costs, it can also be considered detrimental to the welfare of consumers. The profit share is negatively correlated with labor share, and the degree of correlation is strong: -0.91 over the 1980–2018 period. This correlation suggests that the rise of the profit share and the fall of the labor share may have been driven by a common cause.2

Third, income inequality has been exacerbated over the last four decades. In particular, the income share of the top 5 percent households has been steadily rising from 21 percent in early 1980s to more than 34 percent on the eve of the Global Financial Crisis (GFC) in 2008. The rise in income inequality over the last decades may be closely related with the first two trends. To the extent that the major income source of wealthy households is the profits of the firms and the major income source of the working class is labor income, the first two trends explain the trend in income inequality. This suggests that income inequality, too, may have been driven by the same factor behind the decline of the labor share and the rise of the profit share.

Fourth, wealth inequality has also been exacerbated during the last four decades. According to the Survey of Consumer Finances, the net worth of the top 5 percent households has increased about 186 percent between 1983 and 2016. The rise in wealth inequality is not simply the result of rising income inequality–though related, since a bulk of the rise is due to capital gains. If most of capital gains are related to increased stock market value, the surge in wealth inequality may have been driven by the same cause that explains the aforementioned three secular trends.

Fifth, the rise of income inequality has happened concurrently with the rise of household sector leverage ratio. The household sector credit-to-GDP ratio was 45 percent at the beginning of 1980s. Since then, the ratio steadily increased and reached almost 100 percent on the eve of GFC. This suggests that a growing share of national income has been allocated to income groups with low marginal propensities to consume (MPC). If there is a negative correlation between income level and MPC, as shown by Dynan et al. (2004) and Jappelli and Pistaferri (2014), even this secular trend may have the same cause that generates the rising income inequality.

Finally, the rising household sector leverage has been coupled with rising financial instability in the sense of Schularick and Taylor (2012). The probability of financial crisis in the United States, computed using the estimates of the multi-country logit model of financial crisis by Schularick and Taylor (2012), has steadily risen from 2.1 percent in 1980 to a level close to 3.5 percent on the eve of GFC.3 The secular rise of financial instability is clearly linked to credit expansion over the last few decades.

The fact that the six secular trends have realized over a time period in which the investmentto-output ratio has steadily declined suggests that the rise of market power of the firms may have been the driving force of the six secular trends. To understand this point, it is useful to remind a factor efficiency condition from a real business cycle (RBC) model with monopolistic competition and CRS Cobb-Douglas technology (as the one developed in this paper): r = µα(y/k), where r is the real rental rate of capital, µ is the real marginal cost and the inverse of the gross markup of monopolistic competitors, α is the production share of capital, and y/k is the output-to-capital ratio. If r is stable, a declining investment-to-output ratio–and hence, a rising output-to-capital ratio–is consistent with falling real marginal cost, and thus a rise of profits. If, instead, r has been declining over time, the required drop in real marginal cost must have been even larger.

In this paper, we quantitatively investigate the role of rising firms’ market power in both product and labor markets in explaining the six secular trends. In so doing, we are inspired by Kalecki (1971), who, in contrast with Kaldor (1957), predicted that the market power of the firms would increase over time and consequently, labor share would fall in the long-run. In particular, we develop an RBC model in which two classes of agents interact in a Kaleckian setting. The first type of agents, named agents K, whose population share is calibrated at 5 percent, own monopolistically competitive firms and accumulate real (capital) and financial assets (bonds). The second type of agents, named agents W, whose population share is calibrated at 95 percent, work for labor earnings and do not participate in capital market, but issue private bonds for consumption smoothing. The two types of agents interact in two markets. In the labor market, they bargain over the wage. In the credit market, agents K play the role of creditors and agents W the role of borrowers.

We assign so-called spirit-of-capitalism preferences to agent K such that they earn direct utility from holding financial wealth, which is assumed to represent the social status (Bakshi and Chen, 1996). We show that such preferences are key in creating a direct link between income inequality and credit accumulation, as they control the marginal propensity to save (MPS) out of permanent income shocks. To that end, we endogeneize the production and income distribution of the endogenous financial crisis model of Kumhof et al. (2015). In doing so, we can study how changes in labor and profit shares due to rising firms’ market power are linked to income inequality, credit expansion, and financial instability (summarized by the probability of an endogenous financial crisis event).

We posit that the market power of the firms owned by agent K in both product market and labor market (in the form of bargaining power) steadily increases over time for three decades (1980– 2010) and study the transitional dynamics of the model economy. On the one hand, we calibrate the range of the elasticity of substitution for monopolistically competitive firms to match the rise of markup over this period reported by Hall (2018) and De Loecker et al. (2019). On the other hand, we calibrate the range of firms’ bargaining power in wage setting to match the change in the unemployment rate over the 30-year period. We then ask if such institutional changes could generate the six secular trends we point out, and the answer is yes. The model generates the following quantitative results, which are broadly in line with the data over 1980–2010 period (in parenthesis):

R1. Decline of labor share: 13 ppts (7 ppts)

R2. Rise of profit share: 15 ppts (13 ppts)

R3. Rise of income share of top 5% in income distribution: 16 ppts (13 ppts)

R4. Cumulative growth of wealth of top 5% in wealth distribution: 104% (186%)

R5. Rise of credit-to-GDP ratio: 31 ppts (40 ppts)

R6. Rise of the probability of financial crisis: 0.8 ppts (1.3 ppts)4

We run several validity checks against our modeling choices. First, we have made an assumption that wealthy households earn direct utility only from holding financial wealth, but not from accumulating physical capital. We test the validity of our modeling choice by showing the counterfactual implications of an alternative hypothesis: wealthy households in the model earn direct utility not only from holding financial assets, but also from holding real assets such as capital stock, which we call capital-in the utility model. The capital-in-the-utility model delivers a few counterfactual implications for various aspects of the economy. Since the investor earns strictly positive marginal utility from holding capital, capital accumulation is enhanced far beyond the level in the baseline, increasing the marginal productivity of labor, raising labor demand and lowering the unemployment rate 10 percentage points in 30 years, which is clearly counterfactual. Furthermore, the investment to output ratio increases 18 percent over this period, which contrasts with the 18 percent decline both in the data and in our baseline model. Finally, the greater incentive to accumulate physical capital generates far greater income for wealthy households, creating the rise of credit-to-GDP ratio that greately overshoots the level observed in the data.

Second, we consider borrowers’ motive to increase debt. In our baseline model, credit accumulation is driven by the spirit-of-capitalism preferences. Another popular narrative behind the rise of credit accumulation is the “keeping-up-with-the-Joneses” preferences for borrowers. This narrative argues that it was the borrowers’ desire to catch up with the lifestyle of the wealthy households, even when their income stagnated, that explains the rise of the household sector leverage ratio.5 To test this narrative, we modify the preferences of agent W such that the reference point in their external habit is agent K’s consumption level, which is larger than agent W’s consumption level by construction, as agents W are the poorest agents in the model. We find that if keeping-up-withthe-Joneses preferences were the main driver of the credit expansion, credit-to-GDP ratio rises 50 percentage points in 30 years, a substantially higher increase than the one observed in the baseline and also larger than in the data. However, such overshooting helps match the rise in the probability of financial crises. For this reason, we cannot preclude the possibility that the demand factor known as “keeping-up-with-the-Joneses” is one of the factors behind the rises of household leverage and financial instability.

Third, we introduce nominal rigidities and non-zero trend inflation into the model to study whether the disinflation process observed during the 1980s and 1990s had any independent contribution to the secular trends on the labor/capital/profit shares, income inequality, and financial instability. We consider two types of staggered pricing models, one in which the duration of price contract is exogenously fixed and the other in which firms can optimally readjust the contract duration in response to changes in trend inflation. We find that the additional contribution of monetary policy to the secular trends is not materially important in both types of models.

We finish our analysis by deriving some macroprudential policy implications. To this end, we introduce a redistribution policy to our baseline model that consists of a dividend income tax for agent K and social security spending for agent W. This taxation is non-distortionary in our economy, as the tax rate does not interfere with production decisions. Our results show that a policy of gradually increasing the tax rate from zero to 30 percent over the last 30 years might have been effective in preventing almost 50 percent of buildup in income inequality, credit growth and the increase in the endogenous probability of financial crisis. Since the taxation leaves production effi ciency intact, the secular decline in labor share is left intact while the increase in income inequality is substantially subdued. This suggests that carefully designed redistribution policies can be quite effective macroprudential policy tools and more research is warranted in this area.

Related literature: The main contribution of this paper is to bring together two strands of literature that analyze secular trends in the U.S. economy. First, our paper is related to the growing literature that documents and provides explanations for some of the trends we aim to explain. Barkai (forthcoming), De Loecker et al. (2019), Eggertsson et al. (2018), Guti´errez and Philippon (2017), Bergholt et al. (2019), and Farhi and Gourio (2018) explain the decline of the labor share and the capital share, and/or the rise of profit share, via increases in firms’ market power in product markets.6 However, different from our paper, these papers do not study how changes in factor shares are linked to the rise in income inequality, household sector leverage, and increased financial instability.

Second, our paper is also related to Iacoviello (2008) and Kumhof et al. (2015) that study the link between income inequality and household sector leverage. However, both papers remain agnostic about the origin of changes in the income distribution, as income inequality is assumed to follow an exogenous process in their endowment economy models. In our model, the income distribution is endogenously determined by firms’ market power in both product and labor markets.

Our paper’s main contribution is thus to provide a unifying framework that can simultaneously analyze secular trends in factor shares, income/wealth inequality, and financial instability via increases in household sector leverage and probability of financial crisis. Another contribution of our paper to the above-mentioned literature is to include endogenous unemployment via search and matching frictions. We view this as an important contribution for two main reasons. First, allowing for search and matching frictions in the labor market allows us to study the implications of changes in firms’ market power on the unemployment rate. In particular, we show that if one tries to explain the entire decline of the labor share or the rise of the profit share through the decline of the elasticity of substitution, an important counterfactual implication arises: a considerable increase in the natural rate of unemployment, which is not in line with the data. This is one of the main reasons to believe that the firms’ market power in product markets needs to be combined with firms’ bargaining power in labor markets to explain the secular rise of the profit share or the secular decline of labor/capital share. The former increases the natural rate of unemployment while the latter lowers the natural rate such that the two offset each other while both contributing to the rise in profits.

Second, allowing for search and matching frictions enables us to study the implications of increases in firms’ bargaining power in the labor market on the secular trends under interest. This relates to the previous work by Blanchard (1997), Caballero and Hammour (1998), and Blanchard and Giavazzi (2003) that study how changes in bargaining power affect trend factor shares in Europe. In addition to factor shares, our paper allows the study of the implications of changes in bargaining power for household sector leverage and the associated probability of endogenous financial crisis. Our paper focuses on longer-run trends, but the work by Gertler et al. (2008) and Drautzburg et al. (2017) focuses instead on short- and medium-term fluctuations on workers’ bargaining power and their role in driving business cycle fluctuations.

Structure of the paper: The rest of the paper is organized as follows. Section 2 describes the theoretical model. Section 3 discusses the calibration strategy and presents the main results of the paper. Section 4 discusses a few alternative modeling choices and their abilities to generate the secular trends aforementioned. While our model is based on an RBC framework, we also investigate the possible contribution of monetary policy to the secular trends in the presence of nominal rigidities. Section 5 derives macroprudential policy implications. Finally, Section 6 concludes.

2 Model There are two types of agents in the economy and each type is formed by a continuum of members. The first type, agent K, whose population share is χ ∈ (0, 1), owns the firms and accumulates physical capital. The members of the second type, agents W, work for a wage when employed, and search for a job and receive unemployment benefits when unemployed. The two types interact with each other in the labor market and the credit market. The product market is monopolistically competitive, in which a continuum of firms produce a variety of consumption goods using capital and labor. The labor market is subject to search and matching frictions. Agents K play the role of employers and creditors, while agents W play the role of workers and debtors. 2.1 Technology 2.1.1 Profit Maximization There exists a continuum of monopolistically competitive firms indexed by i ∈ [0, 1]. A firm i uses a Cobb-Douglas technology to produce output yt(i) = zkt−1(i) αnt(i) 1−α, where z is aggregate productivity, taken as a constant throughout the analysis, and kt−1(i) and nt(i) are capital and labor inputs, respectively. Since the variety of consumption goods is combined by a CES aggregator with elasticity of substitution γ ∈ (1, ∞), the product demand is given by yt(i) = pt(i) −γyt , where pt(i) is the relative price of firm i; i.e., pt(i) ≡ Pt(i)/Pt , Pt ≡ hR 1 0 Pt(i) 1−γdii1/(1−γ) is the aggregate price index, and yt is aggregate demand. We assume complete flexibility in product prices. Hence, the profit maximization problem of the firm is static: max pt(i) pt(i) 1−γ yt − µt (i)pt(i) −γ yt , where µt (i) is the real marginal cost. The solution to the static optimization problem takes a well-known markup pricing rule: pt(i) = γ γ − 1 µt (i). (1) 2.1.2 Matching Technology The matching process is governed by a CRS aggregate matching function given by m(vt , ut) = ζv tu 1− t , where vt and ut denote aggregate vacancy posting and unemployed workers at the beginning of the period, respectively. ζ is the matching efficiency, and is the elasticity of the matching function. The job finding rate, the probability of an unemployed worker to meet a vacancy, is given by pt = m(vt , ut)/ut = ζθ t , where θt ≡ vt/ut is labor market tightness. The job filling rate, the probability of a vacancy to meet with an unemployed worker, is given by qt = m(vt , ut)/vt = ζθ−1 t . We assume exogenous separations so that in each period a fraction ρ of existing employment separates and enters unemployment. The unemployment rate at the beginning of the period is given by ut = 1 − χ − (1 − ρ)nt−1. 2.1.3 Cost Minimization Firms i posts vacancies vt(i), which cost ξ per period, to replenish the employment stock exogeneously destroyed. The law of motion for the employment stock at firm i is given by nt(i) = (1 − ρ)nt−1(i) + qtvt(i). Given the optimal relative price (1), the firm minimizes its production costs by choosing vacancies, employment, and capital rental. The efficiency conditions require: Jt(i) = ξ qt , (2) Jt(i) = Et X∞ s=1 mK t,s(1 − ρ) s−1 µs (i)(1 − α) ys(i) ns(i) − wt(i) , (3) 0 = µt (i)α yt(i) kt−1(i) − rt , (4) where mK t,t+1 is the stochastic discount factor of the owners of the firms, that is, agents K. In turn, Jt(i) is the Lagrange multiplier of the cost minimization problem associated with the law of motion for employment stock, measuring the marginal value of a job for the firm. wt(i) is the wage rate, and rt is the rental rate of capital. Equation (2) shows that the marginal value of a job is equated with the present value of the vacancy costs expected over the duration of the vacancy, i.e., ξ/qt . Equation (3) then shows the economic content of the marginal value of a job: the present value of the gap between the marginal productivity of labor and the real wage. In contrast with labor, firms do not face search frictions in capital market and the efficiency condition (4) is static: the marginal cost of renting capital is equated with the marginal benefit of renting capital (i.e., the marginal productivity of capital evaluated at the real marginal cost). 2.1.4 Wage Bargaining We assume that the equilibrium wage is determined through Nash bargaining between a firm and a matched worker: wt(i) = arg max Wt(i) ηJt(i) 1−η , where Wt(i) is the workers’ surplus value and η is the workers’ bargaining power. The surplus value satisfies the following condition: Wt(i) = Et X∞ s=1 mW t,s(1 − ρ) s−1 [ws(i) − ws ], (5) where mW t,t+1 is the worker’ stochastic discount factor and wt the worker’s outside option given by wt = b U + (1 − ρ)Et mW t,t+1pt+1 Z 1 0 vt+1(j) vt+1 Wt+1(j)dj , (6) where b U are unemployment insurance (UI) benefits and pt+1vt+1(j)/vt+1 is the job finding probability at firm j. The Nash bargaining solution takes the well-known form of rent sharing condition: ηJt(i) = (1 − η)Wt(i). It is straightforward to show that by combining the rent sharing condition with equations (2), (3), (5) and (6), we can derive the equilibrium wage as7 wt(i) = ηµt (i)(1 − α) yt(i) nt(i) + (1 − η)b U (7) +η(1 − ρ)Et mK t,t+1 − (1 − η)mW t,t+1(1 − pt+1) ξ qt+1 . 2.2 Preferences 2.2.1 Agent W The preferences of agents W are specified as a standard form of consumption utility: U W t = Et X∞ t=0 (β W ) t ( (c W t ) 1−1/σc 1 − 1/σc ) , (8) where c W t = hR 1 0 c W t (i) 1−1/γdii1/(1−1/γ) is per-capita consumption of agent W, β W ∈ (0, 1) is the time discount factor, and σc ∈ (0, ∞) is the intertemporal elasticity of substitution. Agents W work for wage incomes (wt per worker) when employed, and search for new jobs and collect UI benefits when unemployed. Agents W do not accumulate physical capital or shares of firms. However, they can issue defaultable private bonds (bt per capita) for consumption smoothing. The market price of the discount bond is denoted by q B t . If borrowers do not default, the bond delivers one unit of consumption good to lenders in the next period. If borrowers default, lenders recover only 1 − h, where h is the haircut associated with the default. Thus, the actual payment can be expressed as: lt = (1 − hδB t )bt−1, where δ B t ∈ {0, 1} is a default indicator that takes 1 upon default and 0 otherwise. While defaulting releases the budget constraint of agents W by hbt−1, it also involves pecuniary and non-pecuniary costs, the latter taking the form of direct utility cost, something that can be considered as “default stigma”. We explain the former here and the latter when discussing the default decision in Section 2.3. The size of the pecuniary default cost is assumed to be a fraction νt of aggregate output, which follows: νt = ρννt−1 + γν δ B t . (9) Since the pecuniary cost of default comes down to zero only gradually, it generates a sequence of negative income flows. Hence, while defaulting immediately releases the budget constraint for agents W, it generates a sequence of default-related payments as well. The pecuniary cost of default is assumed to reduce aggregate income: yt = zkα t−1n 1−α t − νtyt . Finally, we assume that there are two types of transfer payments to agents W: UI benefits (1 − χ − nt)b U /(1 − χ) and lump-sum taxes Tt , which fund UI benefits. The budget constraint of agent W can then be expressed as c W t = q B t bt − lt + 1 1 − χ Z 1 0 wt(i)nt(i)di − νtyt . Note that UI benefits are canceled out by the lump-sum transfer. However, this does not imply that UI benefits do not play any role in our model. UI benefits are an important determinant of the bargained wage as shown by equation (7). The efficiency condition for bond issuance is given by q B t = Et h mW t,t+1(1 − hpδ t+1) i , (10) where mW t,t+1 = β W (c W t+1/cW t ) −1/σc and p δ t+1 ≡ prob(δ B t+1 = 1). Equation (10) plays the role of credit demand in private bond market. To show how the bond market clears, we need to describe how credit supply is determined by agents K’s bond investment decision. 2.2.2 Agent K In order to create a stronger incentive for agents K to accumulate financial wealth than what would be implied by a standard consumption utility, we specify their preferences with wealth-in-utility: U K t = Et X∞ t=0 (β K) t ( (c K t ) 1−1/σc 1 − 1/σc + ψ B [1 + bt(1 − χ)/χ] 1−1/σb 1 − 1/σb ) , (11) where c K t = hR 1 0 c K t (i) 1−1/γdii1/(1−1/γ) is per-capita consumption of agent K, β K ∈ (0, 1) is the time discount factor, and bt(1 − χ)/χ is per-capita holdings of private bonds. With these preferences, agents K earn utility not only from consuming goods, but also from holding financial bonds. Financial wealth in this class of models represents absolute social status, and economic agents earn direct utility from increases in their social status (Bakshi and Chen, 1996) represented by financial wealth. The specific functional form is taken from Kumhof et al. (2015). Similar specifications are recently used by Ono (2015) and Michau (2018) to study secular stagnation.8 The budget constraint of agent K is given by c K t = (lt − q B t bt) 1 − χ χ + 1 χ {rtkt−1 + Πt − q K t [kt − (1 − δ)kt−1]} , (12) where rtkt−1 is aggregate rental income, Πt is aggregate dividend income, q K t [kt − (1 − δ)kt−1] is new investment in physical capital, with q K t denoting the price of capital and δ the capital depreciation rate.9 In the budget constraint, the first term is multiplied by (1 − χ)/χ, where 1 − χ transforms type-W agents’ per capita issuance into an aggregate, and 1/χ transforms the aggregate into type-K agents’ per capita holdings. The second term is multiplied by 1/χ to transform the aggregate flows (rental income, profit and investment) into per capita flows. The efficiency conditions of maximizing (11) subject to (12) are given by q B t = Et h mK t,t+1(1 − hpδ t+1) i + ψ B (c K t )−1/σc 1 + bt 1 − χ χ −1/σb , (13) 1 = Et mK t,t+1 rt+1 + (1 − δ)q K t+1 q K t . (14) Equation (13) plays the role of credit supply. The credit market equilibrium {bt , qB t } is determined by the intersection of equations (10) and (13). In this equilibrium, the second term on the right side of equation (13), the marginal utility of bond holding, creates liquidity premium for bond holders, who are willing to accept higher market value of debt (lower interest rate). Equation (14) is a standard Lucas-tree equation. 2.3 Default Decision and Financial Instability We define financial instability as the likelihood of an event in which a significant portion of debt obligations is reneged at least partially. In our model, the likelihood is measured by p δ t ≡ prob(δ B t = 1). We borrow the endogenous default decision from the endowment economy of Kumhof et al. (2015) and adapt it into our production economy. In our framework, the default probability is a function of all state variables. For a given set of macroeconomic fundamentals, borrowers’ default decision depends on the random draw of the utility cost of default denoted by δ t . In particular, δ t is i.i.d and follows a modified logistic distribution with cdf Ξ(·): Ξ( δ t ) =    % 1 + exp(−ςδ t ) if δ t < ∞ 1 if δ t = ∞    , where 0 < % < 1. The parameters % and ς, together with γν and ρν from equation (9), are calibrated to match the empirical evidence on financial crises. We define the values of default U D t and non-default U N t as U D t ((1 − h)bt−1, νt−1) = (c D t ) 1−1/σc 1 − 1/σc + β W Et [U W t+1(lt+1, ρννt−1 + γν )], U N t (bt−1, νt−1) = (c N t ) 1−1/σc 1 − 1/σc + β W Et [U W t+1(lt+1, ρννt−1)], where U W t+1 corresponds to equation (8). c D t ≡ c W t (δ B t = 1) and c N t ≡ c W t (δ B t = 0) are consumption values conditional on default and non-default decisions, respectively. Note that a default decision today creates a persistent difference in the flow of future utility due to the assumption 0 < ρν < 1. The probability of default is then given by p δ t ≡ prob(δ B t = 1) = Ξ(U D t ((1 − h)bt−1, νt−1) − U N t (bt−1, νt−1)). (15) Note that individuals take macroeconomic variables as given while making their individual default decision. The bond market is characterized as a competitive equilibrium with a continuum of agents and “the actions of a single individual are negligible” (Aumann, 1975). In our symmetric default or non-default equilibrium, each individual makes an identical choice, believing that her actions will not affect macroeconomic outcomes. However, with everyone making the same choice, default decisions impact the economy in equilibrium. It is for the same reason that neither the borrower’s nor the lender’s efficiency condition (equations (10) and (13), respectively) incorporate the effect of increasing debt on the probability of default or the price of bond. In other words, both agents behave as if ∂pδ t+1/∂bt = ∂qB t /∂bt = 0 because they view their individual actions as inconsequential for the competitive equilibrium in debt market. 3 Results The main results of the paper are presented in this section. We first calibrate the model economy to be consistent with relevant macroeconomic moments of the U.S. economy in 1980. We then keep all parameters fixed at this 1980 initial steady state and implement exogenous increases in firms’ market power both in product and labor markets. We do so via changes in the elasticity of substitution between goods and via changes in the worker’s bargaining power, respectively. The 11 main finding of the paper is to show that the increase in market power can go a long way in explaining secular trends on labor/capital shares, income inequality, and financial instability by performing an analysis of transitional dynamics. Finally, we analyze the marginal contributions of changes in market power in the product market vs. changes in market power in the labor market in explaining the secular trends. 3.1 Calibration The model is calibrated at a quarterly frequency to match relevant macroeconomic moments of the U.S. economy in 1980 (i.e., our initial steady state). Table 1 summarizes the parameter values. The population share of agents K is calibrated at 5 percent. Preferences and default: The calibration strategy for default-related parameters follows closely the one in Kumhof et al. (2015). In particular, we use the same default haircut (h = 0.1) and the persistence of the default cost (ρν = 0.650.25). The output loss upon default is set to γν = 0.028, which implies a 3.5 percent loss in aggregate output on impact and a cumulative output loss of around 11 percent of annual output. Regarding the parameters of the modified logistic distribution of the utility cost of default, we calibrate % = 0.0086 and set ς =18 to match an annual default probability of 2.1 percent, consistent with its empirical counterpart in 1980 computed by Schularick and Taylor (2012). We set the wealth elasticity σb= 1.09 as in Kumhof et al. (2015) and set ψ B = 0.29 to generate a MPS of 0.329 for agent K, which is close to the empirical estimate of Dynan et al. (2004). We set the discount factor of agent W to a standard value in the literature (β W = 0.99) and the discount factor of agent K to match a private credit-to-GDP ratio of 0.45 in the initial steady state (β K = 0.88), consistent with its empirical counterpart in 1980. Finally, we specify a log utility (σc = 1). Production: The capital share of production equals α = 0.16 to match a labor income share of 0.69 in the initial steady state. We set the investment adjustment cost coefficient κ and the capital depreciation rate δ to standard values in the literature (κ = 0.5 and δ = 0.05). The elasticity of substitution between goods is set to γ = 7.5 in the initial steady state, consistent with a 15 percent markup (Hall, 2018). Since the focus of this paper is to match secular trends in the data, we omit the analysis of business cycle fluctuations and thus keep aggregate productivity fixed at z = 1. Labor markets: The efficiency of the matching function is set to ζ = 0.948 to hit a quarterly job finding rate of 70 percent in the initial steady state as in the Current Population Survey (CPS). The exogenous gross separation rate is calibrated to ρ = 0.21, so that the quarterly net separation rate equals 6.2 percent as in the CPS. We follow the evidence reported in Pissarides and Petrongolo (2001) to calibrate the elasticity of the Cobb-Douglas matching function to = 0.5. We set the workers’ bargaining power to η = 0.75 in the initial steady state, resulting in an initial steady state unemployment rate of 8 percent. UI benefits equal b U = 0.47, which represent 71 percent of the equilibrium wage in the initial steady state. The literature considers this a plausible value (Hall and Milgrom, 2008). Finally, we set the vacancy posting cost equal to ξ = 0.11, about 11 percent of labor productivity, essentially the same as in Hagedorn and Manovskii (2008) and very similar to other values used in the literature. Secular trends in market power: We implement the rise of firm’s market power in product markets via decreases in the elasticity of substitution between goods, γ, and the rise of firm’s market power in labor markets via decreases in the worker’s bargaining power, η. In particular, we assume that both γ and η follow random walk processes: γt = γt−1 + γ t , and ηt = ηt−1 + η t . We then jointly calibrate { γ t , η t } T =120 t=1 such that the markup rises from 15 percent to 40 percent and the unemployment rate falls from 8 percent to 5.5 percent over a 30-year period.10 The calibrated change in markup over the 30-year period corresponds to the same range estimated by Hall (2018), and somewhat lower than the rise estimated by De Loecker et al. (2019). The change in the unemployment rate in the model tracks the movements of the unemployment rate in the data. Figure 1 shows the evolution of the markup and the unemployment rate in the model over 150 quarters.11 Importantly, agents do not have perfect foresight over { γ t , η t } T =120 t=1 at the beginning of the simulation, which means that they are surprised every period by the changes in γt and ηt . An alternative assumption regarding the information structure is to assume that the entire paths of { γ t , η t } T =120 t=1 are known to the agents at the beginning of the simulation. However, we do not adopt this assumption because it seems unrealistic to believe that, at the beginning of the 1980s, agents were able to perfectly foresee the structural changes in market power that the economy would undergo over the following 30 years. Note that the path of the unemployment rate shown in Figure 1 is U-shaped as the unemployment rate slightly undershoots the terminal level of 5.5 percent. This path is because the decline of worker’s bargaining power initially dominates the rise of product market power in its impact on the unemployment rate. The former improves the job creation condition for firms, creating new jobs. The latter works in the opposite direction: As firms increase markups, product and labor demands are reduced. 3.2 Main Results Figure 2 shows the macroeconomic implications of rising firms’ market power in both product and labor markets in our model. In particular, we plot the dynamic transition paths of factor shares and profit shares in the top panels and the corresponding paths for income inequality (measured by the top 5 percent income share), private credit-to-GDP ratio, and default probability in the bottom panels. A rise of firm’s market power in both product and labor markets generates a fall in the labor share of about 13 percentage points. Capital share, given by (rt + δ)kt−1/yt , also declines but by much less. The declines of labor and capital shares are a direct consequence of the decline of real marginal cost, which itself is due to the rising market power. Since the production efficiency requires αµt = rtkt−1/yt , the capital share has to decline. In turn, the labor share has to decline more than the real marginal cost because of the rising firm’s bargaining power in labor market, which increases the value of a filled job, something not feasible without the real wage declining much faster than the real marginal cost given equation (3). The decline of both capital and labor shares can only mean that the profit share must rise as shown in panel (c). In our environment, profits and capital incomes are earned by agents K. Given that the increase in the profit share is larger than the decline of the capital share, the income share of agents K secularly rises as a consequence of greater firms’ market power, as shown in panel (d). In our calibrated model, and consistent with the data, agents K exhibit relatively high MPS out of permanent income due to the spirit-of-capitalism preferences. This feature is crucial to induce agents K to accumulate financial wealth. As shown in panel (e), a substantial part of type-K agents’ increased income is invested in private bonds, and the credit-to-GDP ratio rises secularly. As the indebtedness of the economy grows, the probability of financial crisis also rises by about 1 percentage point (see panel (f)).12 Figure 3 compares the results of the model (red dashed lines) with data (blue solid lines) for six relevant variables. Since the focus of this paper is to match the secular trends in the data using the transition dynamics of the model, we abstract from analyzing business cycle fluctuations. However, we do incorporate the fact that a financial crisis occurred in 2008. Accordingly, at the end of the 30-year simulation, the economy is given a particularly low realization of the random draw for the utility cost of default and a financial crisis occurs. Consequently, as shown in panel (a), the unemployment rate jumps about 2.5 percentage points, around half of the observed surge during the GFC. When comparing the secular trends generated by the model with the data, we see that the decline of the labor share predicted by the model is slightly greater than in the data (see panel (b)). However, given that there is no distinction between the median and average labor earnings in our model and the median labor share has declined more than the average labor share in the data, the greater decline in labor share during our simulation can be considered more in line with the decline of median labor share in the data. Regarding the capital share and the profit share, the secular trends generated by the model are in line with their empirical counterparts estimated by Barkai (forthcoming). In particular, the capital share falls by 18 percent in the model, from 0.176 to 0.145, close to the 22 percent decline observed in the data. In turn, the profit share increases 15.3 percentage points in the model, from 5.7 percent to 21percent, also close to the 13.5 percentage point increase observed in the data. Panel (c) shows that the model’s income share of top 5 percent income earners (i.e., agents K in the model) tracks very closely the secular trend of its empirical counterpart. The combination of rising income share of top 5 percent earners and the relatively high MPS of this income group due to the spirit-of-capitalism preferences makes the unused income to be accumulated as financial wealth in the form of private credit. Importantly, as shown in panel (d), the model-generated credit-to-GDP ratio follows very closely the secular trend in the data. Panel (e) then shows the secular rise of the probability of financial crisis both in the model and in the data. In the data, this probability reached almost 5 percent on the eve of GFC. However, a linear trend estimate, which we are trying to match with the transitional dynamics of the model, rose only to 3.5 percent. Thus the model can account for about two thirds of the trend increase of the probability of financial crisis in the data. Eggertsson et al. (2018) argue that savings did not contribute much to the rise of financial wealth accumulation because the nation-wide saving rate has been relatively low in the United States. Thus, capital gains must have played a more prominent role. However, it is important to notice that the low saving rate hides important financial flows among heterogeneous agents. In contrast with the accumulation of physical capital, the accumulation of private credit shown in panel (d) of Figure 3, does not contribute to the “wealth of nation” as the assets of the creditors are offset by the liabilities of the debtors. However, credit accumulation is an important channel through which wealth inequality is created. Panel (f) shows the secular rise of stock market capitalization-to-GDP for both model and data. Comparing panels (d) and (f), we can see that credit accumulation accounts for roughly a third of total gains in wealth of agents K in the model and in the data. Therefore, in contrast with Eggertsson et al. (2018), our model assigns an important role for saving in creating wealth inequality. The rest of the increase in wealth inequality is due to capital gains driven by the rise of profits. Importantly, our results are consistent with Greenwald et al. (2019), who find that the most important driving force behind the sharply rising equity values in the United States over the last several decades has been a factor share shock that reallocates rents to shareholders and away from labor compensation. Greenwald et al. (2019) interpret this shock as changes in industry concentration and changes in the bargaining power of U.S. workers, which are also the driving forces in our model economy. Figure 4 shows the crucial role played by the spirit-of-capitalism preferences in the model in matching the observed secular trends in the credit-to-GDP ratio and the probability of financial crisis. Recall that we calibrate the utility weight on private bond holdings, ψ B , to equalize the MPS of agents K in the model to the MPS of wealthy agents in the data. This requires ψ B = 0.29 in our baseline calibration. Figure 4 shows that, in general, assigning higher (lower) values for ψ B , that is, letting agents K earn higher (lower) utility from holding financial assets leads to larger (smaller) MPS and therefore larger (smaller) accumulation of credit relative to the size of the economy, and a higher (lower) probability of financial crisis. Finally, we study the implications of our model for two non-targeted variables with clear trends in the data: Tobin’s Q and investment-to-output ratio. Guti´errez and Philippon (2017) show that the Tobin’s Q of the U.S. stock market increased more than threefold since 1980 and that the investment-to-operating income ratio has fallen about 20 percentage points from 27 percent in 1980 to 7 percent in 2012. Both papers argue that these two phenomena are consistent with the rise of market power. The results in this paper are also in line with these secular trends: our model’s Tobin’s Q increases 4.3 times during our simulation period, slightly overshooting the increase of 3.5 times observed in the data.13 At the same time, the model’s investment-to-output ratio declines about 18 percent. This is called “decline of Q-sensitivity (-elasticity) of investment (and entry)” by Guti´errez and Philippon (2019). Note that the decline of the investment-to-output ratio is unavoidable in the model if the driving force of the rise in Tobin’s Q is the rise of the market power. The capital market efficiency requires rt = µtαyt/kt−1. In the model, rt is fixed by the time preference, and hence, the decline of real marginal costs due to rising firms’ market power requires a decline of capital-to-output ratio, which is consistent with the decline of the investment-to-output ratio over time.14 3.3 The Role of Rising Firms’ Market Power in the Labor Market Our main results are based on the assumption that firms’ market power in both product and labor markets have increased simultaneously since 1980. In this section, we quantify the marginal contributions of the two. Panel (a) of Figure 5 compares the paths of the unemployment rate in our baseline case (blue solid line), where firms’ market power rises in both product and labor markets, with the alternative (red dashed line), where only firms’ market power in product markets rises. Panel (b) shows the paths of the markup in these two cases, which by construction is identical in both cases. What is notable in panel (a) is that the rise of market power in product markets required to explain the increase in markups would imply an implausibly large increase in the unemployment rate without a concurrent change in the firm’s bargaining power in the labor market. That would result in an unemployment rate of around 25 percent at the end of the simulation period, which is clearly inconsistent with the data. The assumption that firm’s bargaining power in the labor market has risen together with the market power over the last three decades is thus essential to avoid a counterfactual prediction for the unemployment rate, an aspect often overlooked in the recent literature on the market power such as Barkai (forthcoming), De Loecker et al. (2019), Eggertsson et al. (2018), Guti´errez and Philippon (2017), Bergholt et al. (2019), and Farhi and Gourio (2018).15 Figure 6 compares the two transitional dynamics for the same variables plotted in Figure 2, with the blue solid line showing the baseline case and the red dashed line showing the alternative with only changes to market power in the product market. The difference between the two cases can be considered the marginal contribution of the rise in firm’s bargaining power in the labor market. Figure 6 makes it clear that the rise in firms’ bargaining power does contribute to the decline of labor share and the rise of profit share. However, it is also clear that the contribution of the bargaining power in labor market to the rises in income inequality, credit-to-GDP ratio, and the probability of financial crisis is much smaller than the effects of increased market power in the product market. 4 Alternative Hypotheses This section runs three validity checks against our baseline specifications. First, we consider an alternative utility form: capital-in-the-utility function for agents K. Our baseline model treats financial wealth and physical assets asymmetrically in that only the former generates direct utilities for wealthy households. This alternative removes the asymmetry by assuming that welathy households earn direct utilities from both assets. As will be shown, this alternative leads to several counterfactual implications. Second, we consider an alternative hypothesis behind the rise of credit accumulation. In particular, instead of assuming that the spirit-of-capitalism preferences drive credit accumulation, we consider borrower’s motive to increase debt by incorporating the “keeping-up-with-the-Joneses” preferences. Finally, we introduce nominal rigidities and non-zero trend inflation into the model to study whether the disinflation process observed during the 1980s and 1990s had any independent contribution to the secular trends on the labor/capital/profit shares, income inequality, and financial instability. In all three exercises, we simulate the model and then confront the obtained results with empirical evidence. Results are summarized in Table 2. 4.1 Capital-In-The-Utility Function We first investigate what happens if agents K earn direct utility not only from financial wealth but also from physical capital accumulation. In this case, the efficiency condition for capital accumulation (equation (14)), is modified into 1 = Et mK t,t+1 rt+1 + (1 − δ)q K t+1 q K t + ψ K (c K t )−1/σc 1 + kt χ −1/σk , where the additional second term captures the liquidity premium due to the spirit-of-capitalism preferences. We set ψ K = ψ B and σk = σb such that the preferences are modeled symmetrically between bond holdings and capital accumulation. The rest of the parameter values remain unchanged to the baseline case, except for the matching efficieny that is set to ζ = 0.8 to avoid a negative unemployment rate at the end of the simulation period. With ψ K > 0, the new equilibrium requires the rental rate of capital, rt , to decline below the level that prevails in the baseline case, which then leads to increases in firms’ capital demand. As a result, we predict that capital accumulation will be larger than in the baseline. The relevant question is whether this prevents credit accumulation from reaching the level observed in our baseline case. Column (b) of Table 2 shows the results, to be compared with our baseline case presented in column (a). Not surprisingly, allowing for capital-in-the-utility reduces the decline of the capital share compared with the baseline. While capital accumulation is enhanced by the liquidity premium discussed above, the production efficiency also requires an increase in labor input as the increase in capital elevates the marginal productivity of labor. This explains why the unemployment rates falls as much as ten percentage points over the three decades under analysis. This is in stark contrast with our baseline results and is a counterfactual implication of the capital-in-the-utility preferences. The labor share declines more in the alternative. This happens despite the fact that increased capital accumulation generates a large increase in labor demand. The reason is that capital-inthe-utility makes the production much more capital intensive as shown by Figure 7. Panel (a) compares the output/labor ratios and panel (b) the capital/labor ratios in the two economies. Both ratios decline over time in the baseline. This is because the output/labor ratio is equal to yt/nt = z(kt−1/nt) α and the capital/labor ratio declines as the rise of the market power reduces capital demand and the decline of workers’ bargaining power increases labor demand. The exact opposite happens with the capital-in-the-utility specification: capital intensity, measured by kt/nt , almost doubles after the three decades of transition. In turn, income inequality rises slightly more than in the baseline economy, given the smaller decline in the capital share and the greater rise in the profit share, which are major components of income for agents K. Our experiment with the capital-in-the-utility was motivated by the concern that such prefer ences may fail to generate the rise of credit-to-GDP ratio observed in the data, because the marginal utility of holding physical capital may restrain credit accumulation. However, it turns out that the rise of credit-to-GDP ratio in this alternative economy is even greater than in our baseline. In particular, the credit-to-GDP ratio rises 51.5 percentage points, which is above the 30.8 percentage point increase of the baseline economy. The capital-in-the-utility preferences create additional incomes that can support additional capital accumulation and can even increase the income devoted to credit accumulation. Since the model with the alternative preferences generates a larger increase in the leverage ratio in terms of credit-to-GDP ratio than the baseline, it also generates a larger increase in the probability of financial crisis. Importantly, the alternative specification for preferences has one important counterfactual implication: the investment-to-output ratio rises secularly, and the cumulative magnitude is on the order of 18 percent. This result is clearly at odds with the data, and this is the most important reason why we do not adopt the capital-in-the-utility preferences as our baseline case. 4.2 Keeping-Up-with-the-Joneses Preferences One intuitive narrative behind the rise of household sector leverage is that as income inequality rises, lower-income households have tried to keep up with the consumption level of upper-class households by increasing debt (see, for example, Christen and Morgan (2005), Barba and Pivetti (2009), Fligstein et al. (2017)). This narrative implicitly posits that what matters for utility is not the absolute level of consumption, but the position of the agent’s consumption relative to the consumption level of a reference group (Duesenberry, 1949; Frank, 1985; Abel, 1990; Gal´ı, 1994). If the consumption gap between low-income households and high-income households increases as a result of widening income gap and the former group is trying to emulate consumption pattern of the latter group, the borrowing demand of the former group increases. One way to represent such preferences in our environment is to assign an external habit to the utility of agents W and have the reference consumption be the consumption level of agents K: U W t = Et X∞ t=0 (β W ) t (c W t − sc˜ K t−1 ) 1−1/σc 1 − 1/σc , where ˜s ≡ s × (¯c W /c¯ K), and s denotes the degree of external habit.16 As the income inequality gap grows over time between the two agents, c W t −sc˜ K t−1 declines because agent W’s consumption declines and agent K’s consumption increases. Hence the marginal utility (c W t − sc˜ K t−1 ) −1/σc increases over time, which incentivizes more borrowing to increase consumption. Column (c) of Table 2 summarizes the results with the keeping-up-with-the-Joneses preferences when s = 0.50. The alternative preferences for the borrowers do not affect the outcomes for product and labor markets: labor and profit shares, real marginal cost, investment-to-output ratio, and Tobin’s Q remain the same as in the baseline. However, the private credit-to-GDP ratio rises 50 percentage points, overshooting the increase observed in the data. The higher credit demand and debt-to-income ratio results in a higher probability of financial crisis, which increases almost 1 percentage point over the 30-year period and gets closer to the estimate of Schularick and Taylor (2012). Panel (a) of Figure 8 compares three cases of different degrees of habits, s = 0 (baseline), s = 0.25, and s = 0.50. The panel shows that the higher demand of credit increases the probability of crisis monotonically during the entire transitional periods. Panel (b) of Figure 8 shows the effects of increases in the probability of default on the price of bond. The lower the price of bond, the more expensive financing becomes. Our baseline results suggest “demand-driven” credit boom is not necessary to generate the bulk of the rise in the credit-to-GDP ratio, as the baseline explains 30 percentage points out of 40 percentage points increase in the data. However, the alternative results indicate that a mild degree of demand factor such as keeping-up-with-the-Joneses preferences can help matching the full degree of credit expansion and higher probability of financial crisis.17 4.3 The Role of Disinflation Policy This paper evaluates whether the observed rise of firm’s market power both in product and labor markets in the last decades explains the secular trends in the labor/profit share, income/wealth inequality, and financial instability in an RBC framework. Our analysis has assumed that the presence of nominal rigidities and the disinflation policy, which was implemented concurrently over the time period of analysis, have not played any relevant role in this process and hence can be set aside in the analysis of the secular trends. This section tests the validity of this assumption by introducing nominal rigidities and non-zero trend inflation into our model described in Section 2. 18 From the viewpoint of the standard New Keynesian theory, there is a natural link between disinflation policy and factor shares. According to the theory, the current inflation rate is the present value of future real marginal cost, the inverse of which is the gross markup. Hence, if a central bank wants to implement a disinflation policy, it has to engineer a decline of future real marginal costs, which requires a decline of the labor and capital share since µ = (wn + rk)/y. 19 In a standard New Keynesian model, disinflation policy can achieve the reduction of real marginal cost by reducing the dispersion of relative prices, which then leads to increase in productivity and reduction in real marginal cost (see Yun (2005)). Hence, there is a theoretical linkage between disinflation policy and factor shares. The question is how quantitatively important this linkage is. Our baseline model implicitly assumes that quantitative importance of this channel is scant to zero. We know test the validity of this assumption. We consider two types of staggered pricing models, one in which the duration of price contract is exogenously fixed (i.e., standard staggered Calvo pricing model) and the other in which firms can optimally readjust the duration of the contract in response to changes in trend inflation. Our exercise consists of adding an exogenous process for trend inflation to the secular trends in firms’ market power in both product and labor markets, and see whether the model results differ from our baseline results. We think that this test is important because the disinflation policy may have important real effects and if so, who the disinflation policy has benefited the most is an important macroeconomic question to analyze. 4.3.1 Calibration of the Disinflation Policy We assume that the central bank is in perfect control of trend inflation rate, defined as the inflation rate in the nonstochastic steady state. In particular, we consider that the central bank announces a new inflation target π ∗ in each quarter. This announcement is perfectly credible to the agents. The perfect credibility assumption is represented by a random walk process, π ∗ t = π ∗ t−1 + π ∗ t , such that Et [π ∗ t+s ] = π ∗ t , Et+1[π ∗ t+1+s ] = π ∗ t+1, ..., ET [π ∗ T +s ] = π ∗ T for any s ≥ 0. The sequence of shocks π ∗ t is chosen such that the path of the inflation target over 120 quarters follows the observed trend of the core PCE inflation rate in the United States from 1979 to 2008 shown in Figure 9. 20 Agents do not have perfect foresight of { π ∗ t } T =120 t=1 at the beginning of the simulation, which means that they are surprised by the changes in the inflation target that occur in each quarter.21 4.3.2 Exogenous Contract Duration Model The staggered price contract model formalized by Calvo (1983) assumes that regardless of the history of pricing, all firms have a probability 1 − ϕ of resetting their prices. We additionally assume that the fraction of firms ϕ with no opportunity to optimally reset their prices set their prices with indexation, i.e., Pt(i) = Pt−1(i)π ε t−1 , where ε ∈ [0, 1) is the degree of indexation.22 As is well known, the staggered price contract generates price dispersion, denoted by ∆t , as some firms cannot reset their prices in each period. The price dispersion term appears in the aggregate production function, yt = z∆ −1 t k α t−1n 1−α t , and it works like a negative technology shock, lowering labor productivity. The price dispersion term in the aggregate production function is the channel through which disinflation policy may create real effects. It can be shown that price dispersion in steady state for a given trend inflation rate is given by:23 ∆ ≡ Z P(i) P −γ di = π po(π) γ 1 − ϕ 1 − ϕπγ , (16) where po(π) is the reset price inflation rate chosen by the firms with the opportunity to readjust their nominal prices. Equation (16) is a product of two terms. The first term is decreasing in the trend inflation rate. This decrease is because the reset price inflation must increase faster than the trend inflation rate, given that the reset pricing firms understand that there would be time periods in which they cannot readjust their prices. The second term is evidently increasing in the trend inflation rate. Of these two terms, the second term dominates, and the price dispersion term is increasing in the trend inflation rate. Panels (a) and (b) of Figure 10 show that in the exogenous contract duration model, both the frequency of the price adjustment and the slope of the Phillips Curve remain constant as trend inflation falls. Instead, the disinflation policy lowers price dispersion as shown in panel (c), boosting the effective total factor productivity (z/∆) in the long run, and lowering real marginal costs as shown in panel (d). The reduction in real marginal costs has direct implications for factor shares because the production efficiency conditions, µ(1 − α) = wn/y and µα = rk/y, imply that the labor and capital shares have to fall in response to the reduction in real marginal costs, and hence the rise of profit share. Column (d) of Table 2 summarizes the results of a disinflation policy in the exogenous contract duration model that occurs at the same time as the changes in firms’ market power considered in our baseline case. We set all parameter values equal to our baseline model (see Table 1), and we use a moderate degree of price rigidities (ϕ = 0.85) and indexation (ε = 0.6) given that this is a calibration for a 30-year period.24 As expected, the disinflation policy does magnify the drop in labor and capital shares and the rise of profit share. Such changes in income shares lead to additional accumulation of credit. However, under our standard calibration of nominal rigidities, the magnitude of the additional channel can be considered modest at best. The additional drop in the labor share for instance is only 1.5 percentage points. Note that if one were to assume a larger degree of price rigidities and a much lower degree of indexation, the efficiency gains generated through reduction in trend inflation would be much larger, and thus the contribution of disinflation to the secular trends more pronounced. However, as shown by Ascari (2004), the efficiency gains would then be implausibly large. 4.3.3 Endogenous Contract Duration Model A limitation of the staggered pricing model just described is that the frequency of price adjustment is fixed over the 30-year period under analysis. However, Nakamura et al. (2018) provide evidence that the frequency of price adjustment has fallen over time as the trend inflation rate has declined. As an alternative to the staggered pricing model, we adopt the endogenous contract duration model developed by Levin and Yun (2007). In this model, firms optimally choose the frequency of price adjustment as the disinflation policy makes the trend inflation rate to fall and the rising market power changes the curvature of the profit function. The frequency of price adjustment becomes a function of trend inflation rate and market power, i.e., 1−ϕ(π ∗ , γ). In this setting, and as shown in panel (a) of Figure 10, firms have incentives to reduce the frequency of price adjustment as trend inflation falls and the curvature of the profit function declines. The reason is that both elements make deviations from the optimal relative price less costly.25 The disinflation policy in the endogenous contract duration model is achieved through a flattening of the Phillips curve, not through the reduction in real marginal costs (see panels (b) and (d) of Figure 10). Therefore, given that the reduction in real marginal costs is the fundamental driver of widening income inequality and credit growth in our model, none of the secular trends stated above can be explained by the disinflation policy in the endogenous contract duration model. This can be seen in column (e) of Table 2, where the changes in the listed variables are almost identical to the changes in our baseline model. Overall, we conclude that the additional contribution of monetary policy to the secular trends in labor/profit shares, inequality, and financial instability are not materially important in both the exogenous and endogenous contract duration models. 5 Implications for Macroprudential Policy We finish our discussion by exploring the macroprudential policy implications of redistributive taxation. To that end, we return to our baseline model. In the baseline, we have assumed no taxation other than the lump sum tax to fund UI benefits. We now introduce dividend income tax rate τ d such that the budget constraint of agent K becomes c K t = (lt − q B t bt) 1 − χ χ + 1 χ n rtkt−1 + (1 − τ d )Πt − q K t [kt − (1 − δ)kt−1] o . Since we assume that aggregate profits are transferred to agents K in a lump sum fashion, the introduction of the dividend taxation does not modify the first-order conditions (FOCs) of the maximization problem of agents K. We assume that the proceeds of dividend income taxation are transferred in a lump sum fashion to agents W as social security spending, St = τ dΠt . Thus, the budget constraint of agents W becomes c W t = q B t bt − lt + 1 1 − χ St + Z 1 0 wt(i)nt(i)di − νtyt . The FOCs of agents W are also not affected by the social security spending. For illustrative purposes, we consider a case in which the dividend income tax rate is linearly raised from 0 to 30 percent over 120 quarters. As we did to model the process for firms’ market power, we assume that the law of motion for the tax rate is given by a random work: τ d t = τ d t−1+d t . At the end of each period, agents’ expectations are given by Et−1[τ d t ] = τ d t−1 . At the beginning of each period, agents realize that the tax rate is adjusted by an amount d t . Figure 11 shows the results. The blue solid line corresponds to our baseline case without the taxation and the red dashed line to the case with taxation. In the top three panels, we can see that labor, capital, and profit shares are not affected by the taxation. The two lines are basically indistinguishable from each other. This result is because the taxation leaves the efficiency conditions of production intact. However, in the bottom three panels, we observe that taxation can have powerful effects on income inequality and credit accumulation. As shown in panel (d), the top 5 percent income share rises to 0.28 by the end of the simulation, only about half of the increase in the baseline. As the unused income that used to be drained into financial investment is eliminated by the taxation, the over-accumulation of credit is much more subdued. Without the tax policy, the combined forces of rising market power and declining bargaining power double the household sector credit-to-GDP ratio by the end of simulation. With the tax policy, a half of the credit growth is now eliminated as shown in panel (e). As the indebtedness of borrowers is stabilized, the probability of financial crisis is contained at a much lower level (see panel (f)). Note that the stock of credit is not part of the wealth of the nation because it is offset by the liabilities of the debtors. Therefore, the taxation does not affect the wealth of nation, it simply breaks the link between the decline of the labor income share and the increase in income inequality. It does so by redistributing income from agents K to agents W with no significant changes in product and labor market equilibrium.

This experiment has important implications for macroprudential policies. Since the GFC, most of the focus of macroprudential policies has been on building the resilience of financial intermediaries by bolstering their capital positions, restricting their risk exposures, and restraining excessive interconnectedness among them. These policies are useful in maintaining financial stability. However, these policies might not address a much more fundamental issue: Why is there so much income “to be intermediated” to begin with? In our framework, the root cause of financial instability is the income inequality driven by changes in market structure and institutional changes that reward the groups at the top of the income distribution. Our experiment suggests that if an important goal for public policy is to limit the probability of a tail event, such as a financial crisis, a powerful macroprudential policy may be a redistribution policy that moderates the rise in income inequality. We believe that more research is warranted in this area.

6 Conclusion

We develop a theoretical model in which the income distribution is endogenously determined by firms’ market power in both product and labor markets and the probability of financial crisis is endogenously determined by the accumulation of household credit. Using the model, we analyze the transitional dynamics of an economy undergoing structural changes in product and labor markets. We find that the secular rise of firms’ market power in both product and labor markets can be an important driver behind a few secular trends experienced by the U.S. economy in the last four 29 decades: the decrease in both the labor share and the capital share, the increase in the profit share, the increase in income inequality, the increase in credit-to-GDP ratio, and the associated rise in financial instability summarized by the probability of a financial crisis event. We also show that redistribution policies that moderate income inequality can be used as strong macroprudential tools in preventing financial crises.

### Sharing Econ Impact---AT: Defense

#### Sharing economy solves extinction.

Neal Gorenflo 13, executive director and co-founder of Shareable, an award-winning news, action, connection hub for the sharing transformation, “The Dark Side of the Sharing Economy: Could Airbnb Accelerate Gentrification,” Shareable, 6/26/13, https://www.shareable.net/the-dark-side-of-the-sharing-economy-could-airbnb-accelerate-gentrification/

The Sharing Economy vs. The Death Economy. Any evaluation of the sharing economy should center on a comparison to the legacy economy. The evidence about the legacy economy is in. It’s a stunning failure as a mechanism to allocate scarce resources. The risk of a global environmental collapse rises every day due to unsustainable levels of natural resource use. All the while some 30% of the world’s population endures life threatening poverty and thousands of species are forever extinguished each year. Most of the benefit for this resource exploitation goes to a tiny, tiny slice of the world's population. It’s old news that the old economy is unfair and kills. There's a growing concensus that we must change our economy or face extinction ourselves. The bottom line is that the speculated downside of the sharing economy is dwarfed by the known downside of the death economy.

People Win, Multinationals Lose. An important part of exploring the tradeoffs of an innovation is understanding which stakeholders in society win and which lose if it's widely adopted. Car sharing stats sheds some light on this. A 2010 UC Berkeley study showed that one shared car replaces up to 13 owned cars, and that 50% of members joined to get access to a car who didn’t already have access. Another study estimated that a city can keep $127 million in the local economy annually for every reduction of 15,000 owned cars. This is based on the fact that households can save over $8,000 a year for each car shed (see cites here). More research is needed, but these stats imply that sharing is good for households and local communities and is bad for big, multinational corporations that make stuff. If true, then this is a tradeoff I’m perfectly OK with because multinationals and the governments they own are the biggest drivers of environmental destruction and wealth inequality. The big picture is about you. Who do you stand for? Do you stand for an economy that's good for you, your family, your community, and the planet? Or do you somehow see your future as better served by multinationals?

### Sharing Econ Impact---Populism

#### The sharing economy promotes urban civic activism and participation---that’s necessary to tackle populism.

Suvi Aho et al 21, MPolSci, works as District Service Manager for the City of Vaasa in Finland, coordinating the programme for participation and local democracy, “Community engagement policies in the era of populism: Finland,” in Populism, Democracy and Community Development, 2021, https://www.jstor.org/stable/j.ctv17z83t8

Community engagement is a key theme in community development. It involves shifting away from a top-down political approach and it ties universal values to the local context. Engagement refers to socially responsive processes and practices with shared outcomes, aligned with individual, community, civic and institutional benefits. While the key level of participation is the local, enabling structures must be found in municipalities and, even further, in the wider neighbourhoods. Not everyone in the community needs to be involved in the process, but efforts must be as inclusive as possible so that everyone in the community has a chance to engage. Thus, community engagement is about encouraging the community to find and to act towards shared goals (Head, 2007; Johnston, 2018).

Established populism in Finland has brought to the surface issues concerning the failures of and exclusions in community engagement and our participatory civic processes. In order to strengthen the functionality of the representative democracy, modernise the means of direct democracy and tackle the decreasing political trust, there has been an overall shift towards community building and citizen engagement in Finland during the past few years. The new Finnish Local Government Act, which came into force in Finland in June 2017, is more concrete and explicit than the previous law concerning citizen participation. The need for reform arose from the increased individualism, the appearance of new channels for interaction (especially social media), and the unequal participation of different population groups.2 The new Act encourages multiple methods for community engagement. Several cities have since developed participatory programmes for citizen engagement, brand-new posts have been created to execute the programmes, and at present professional jobs in citizen engagement are becoming more common (for example, Rosenblum, 2008).

In practice, community development has resulted in officials gravitating to interaction with residents and CSOs in a more profound manner. The challenge for the officials is to have the capability and resources to commit to real participatory actions at the early stages of preparation of public decisions. Also, various electronic, map-based and mobile applications and channels have been created to enhance social interaction in the cities. The participatory models reflect the new ethos and perhaps pedagogical experiments regarding how citizens want to be engaged in making the cities accessible and meaningful. As part of the participatory programmes, most of the larger cities in Finland have established working groups in neighbourhoods and districts, where the local officials, associations and grassroots organisations, inhabitants and decision makers come together to create a joint understanding on topical local issues. At best, this might enable greater local influence and concerns being heard in a timely manner. Working groups might also anticipate future needs in service development and public investments in the neighbourhoods. Further, participatory budgeting has become popular in many cities, and people get to decide, for example, what kind of investments will be made in their neighbourhoods or how the money is to be allocated to resident associations.

As participation is becoming more individualised, there is pressure for CSOs to offer more project-oriented and attractive, low-threshold ways for collective engagement (Seppo, 2013). Citizens of the information age can organise themselves and act towards a common purpose in an easier and more diverse way than ever before. This new form of active citizenship is called urban civic activism (Faehnle et al, 2017). Urban civic activism is empowered, for example, by the local participation and interaction model in Helsinki Metropolitan Area, based on local city coaches, business coaches, local forums, participatory budgeting and shared spaces (City of Helsinki, 2018). In other words, urban civic activism is characterised by local-to-local interactions and the sharing of local services that bypass market and state transactions. The positive power of urban civic activism lies in its possibilities for satisfying basic human needs: people can use their own special expertise for common goals, and by doing so they experience inclusion and social participation (Ryan and Deci, 2000; Deci et al, 2013). This is likely to increase the meaningfulness of life. Activities may include, for example, providing the resources needed to solve a local problem through crowdfunding. Urban civic activism can also help organise new services or transfer existing services to the area. Often these services apply different forms of a sharing economy, comprising what might be identified as a fourth sector. In Finland, typical examples of these types of citizen-related activities are food circuits, shared working spaces, local recycling groups and rental services. In the future, blockchain technologies can significantly accelerate urban civic activism, as blockchains make it possible to create an interactive community with trust and without a third party.

Simultaneously, we need to keep in mind that deliberative democracy may appear as a demanding model, requiring that citizens be competent in rational debate on common affairs. Luckily there are many good examples in this field; for example, the Finnish youth cooperative Allianssi, together with the National Workshop Association, have organised training and interventions related to democracy skills, with people working in the fields of workshop activities, unemployment and outreach youth work.

Luhtakallio and Mustaranta (2017: 123–6), who conducted recent action research in a Helsinki suburb, found that the participatory projects conducted by governing bodies do not support participation as a critical and change-enabling action in relation to power structures. They also conclude that participation (which is the requirement for active citizenship) should not be an end in itself, but rather a tool to change things. As Kearns (1992: 32–3) also states:

the consideration of accountability and awareness of responsibilities should never supersede the main goal of empowering and encouraging people to act by learning new social, political and managerial skills. This implies that in addition to service orientation, active citizenship requires clear demonstration of actual social and individual benefits.

Thus, community engagement projects need to have an impact that can be verified by those participating, otherwise the projects will end up diminishing the trust of the people towards democracy. Further, participatory methods require self-criticality from officials, in order to maintain responsibility, representativeness and legitimacy of the actions (Kestilä-Kekkonen and Korvela, 2017: 27).

Conclusion

Although both reach out to people, the fundamental difference in community engagement practices and populism is how they strive for genuine interaction. Community engagement practitioners aim to support the capacities of all people and encourage inclusiveness, whereas populism in Finland is exclusive by nature. The aims of populists are based on the idea that the nation is a homogenous entity with one true representative (Hirschmann, 1970). Rather than facilitating genuine public will-formation through discussion and deliberative processes, for populists the ‘true nation’ is a rather symbolic creature (Müller, 2016: 116). Community development officials, together with CSOs and the fourth sector, pursue plurality, discussion and joint prioritisation of actions.

The True Finns have offered a patriotic option in contrast to cosmopolitan internationality and multiculturalism that other parties in Finland promote (with various emphases). They have succeeded in channelling the dissatisfaction (of people who emphasise national values) towards a one-sided political agenda, by positioning themselves, in both the national and European context, as a counterforce to the liberal political agenda, which supports immigration and multiculturalism. Among the voters for populism are many ordinary workers, who find national values and the promotion of the well-being of existing Finnish citizens more important than ‘coddling the immigrants’ and promoting immigration. The True Finns profile themselves as the true voice of the common people, differing from the agenda of the liberal ‘elite’, which is described as arrogant and estranged from the people. The economic situation in Europe has remained somewhat challenging over the past ten years, resulting in structural unemployment and fostering dissatisfaction towards Europe-centred political thought. It does not fit well into the nationalistic sense of justice that millions of euros are spent on helping Greece and other pan-European responsibilities – including a liberal immigration policy – while there is plenty of need for help in the home country.

Mechanisms which produce inequality can result in increased political participation, and voting for populist parties can be seen as a form of activation (Hirschmanian voice-alternative3 ) as well as leading to political distrust and withdrawal from political participation (the exit alternative) (Wass, 2016: 35). At best, populism has proved useful in making visible the way in which certain parts of society have not been represented, and brought into focus topics that the public has not been able to discuss, including the level of immigration in Finland and voices critical of the EU.

A recent study by European Economic and Social Committee (Lessenski and Kavrakova, 2019) concludes on the recommendations for tackling the challenges of populism. These recommendations include the same features that we have discussed in this chapter; restoring the public sphere of dialogue and discussion, supporting civil society at local level, investing in formal and informal civic education, and complementing the representative democracy with collaborative elements of participatory democracy.

The need for open discussion of such issues and the role of populist voices in our society is a crucial question for the new century of Finnish democracy. Utilising the subsidiarity principle in communal politics and policy by executing the newly established participatory programmes in cities, villages and neighbourhoods can reinforce people’s belief in their capability to influence. The results of the various participatory programmes established in Finland during the past few years are yet to be seen. Instead the appeal of the populism offered by the True Finns has succeeded well in speaking to people. Yet facilitating participatory programmes and public areas in communities for deliberative political discussion may help overcome the deficits in participation.

#### Causes global war---the US is a model

Kaitlyn Read 19, intelligence analyst, The Center for Global Affairs, New York University, “Is Populism a Threat to Security?,” Global Affairs Review, 5-15-2019, https://gareviewnyu.com/2019/05/15/is-populism-a-threat-to-security/

US Example

While populist movements have emerged throughout Europe, the US provides the quintessential example of a populist movement gaining sufficient power to not only threaten human and state security, but also the liberal world order. The election of President Trump in 2016 exemplifies the significance of successful securitization by a populist leader. President Trump’s populist platform established two homogeneous groups, the socially disadvantaged “common people” versus the “elite,” and he aligned himself with the “common people” (Inglehart and Norris 13). President Trump’s rhetoric during his campaign capitalized on the economic and cultural vulnerabilities felt by many of the less educated in the US who believed that the globalized world’s increasingly progressive outlook did not align with their cultural beliefs and that their economic standings were suffering because of it (Inglehart and Norris 16).

President Trump’s securitization of these cultural and economic vulnerabilities framed Mexican immigrants as the existential threat to these citizens. President Trump’s audience is the Republican Party because the rejection of progressive values is already embedded in the Republican base (Inglehart and Norris 31). Consequently, within the Republican Party, President Trump’s referent object is the less-educated Republican. The functional actor used by President Trump changes, depending on the circumstances, but it is usually the US military or Congress, as these groups have the ability to transform President Trump’s beliefs into actions.

During his presidential campaign, President Trump frequently securitized Mexican migrants by associating them with the loss of jobs, criminal activities, and the diminishment of American values. In a study analyzing 73 speeches given by Trump during his 2016 campaign for the presidency, it was recorded that Trump mentioned immigrants 364 times, with negative comments vastly outnumbering positive remarks, and that he mentioned jobs 1036 times (Lamont 12). Not only was Trump aware that his audience felt occupationally vulnerable, but he was able to utilize this by making immigrants, primarily Mexican immigrants, the principal threat to this vulnerability and by casting himself as the only solution to eliminating this sense of vulnerability.

Furthermore, in 2015, Trump said, “When Mexico sends its people, they’re not sending their best. They’re not sending you. They’re not sending you. They’re sending people that have lots of problems, and they’re bring those problems. They’re bringing drugs. They’re bringing crime. They’re rapists” (LoBianco 2). This quote epitomizes Trump’s securitization strategy and his continual reinforcement of it. Trump associated Mexican immigrants with drugs, crime, and rape – three matters generally agreed as unwanted in society. Thus, Trump was able to label Mexican immigrants as threatening not only to his audience’s occupational vulnerability, but also to their way of life. As a result of this successful securitization, Trump garnered enough support to win the 2016 presidential election.

Since elected, Trump has continued to securitize Mexican immigrants in order to achieve his policy goals. For instance, Trump tweeted, “Building a great Border Wall, with drugs (poison) and enemy combatants pouring into our Country, is all about National Defense. Build WALL through M!” (“Trump Immigration” 1).This tweet evidences Trump’s continuing securitization of Mexican immigrants. Due to his securitization efforts, Trump is able to appease his audience by pursuing the named threat and to garner support for his immigration policy objective of building a wall between the US and Mexico. The only difference between Trump’s securitization of this issue before and after the election is that after the election, Trump has had the de facto power to attempt to enforce his policy objectives.

President Trump’s continuing securitization of Mexican immigrants as an existential threat has also garnered significant domestic support for building a border wall and for terminating the Deferred Action for Childhood Arrivals (DACA) program, which defers deportation for immigrant children. Trump’s securitization of Mexican immigrants has also damaged diplomatic relations between Mexico and the US (“Trump Slams Mexico” 1). While the wall remains at issue, a US Court blocked the termination of DACA (“Judge Orders Trump” 1). Meanwhile, Mexico’s relations with the US remain impaired.

Concluding Threat Assessments of Populism

Populism poses a threat to both state security and human security because the illiberal acts it engenders can erode interstate relations and oppress citizens. For example, the frequent securitization of migrants by populist leaders can result in the implementation of policies restricting immigration. Since this securitization involves antagonistic rhetoric, the migrants’ home state could respond negatively, inciting conflict and threatening state security. Regarding human security, these same policies could also increase deportations of those who left dangerous situations in their home countries. Securitization can be based on class, race, gender, or religion and if successful, can threaten both state and human security as a result of the populist rhetoric and the resulting illiberal policies.

While the illiberal results of populism are a given, the capacity of populism to harm state and human security varies depending on the resources and unchecked power held by the populist leader. That is, “if populists have to share power with non-populists, the effects tend to be small”(Mudde 3), as non-populists provide checks and balances limiting the reach of the populist leader’s illiberal policies. For example, a US Court acted as a check on President Trump’s illiberal policy by blocking the termination of the DACA program. However, with substantial unchecked power, a populist leader’s policies can have a major impact, especially if such power is embedded in the state’s constitution. Significant resources are needed for a populist’s domestic success and even more for international success; consequently, the resources backing a populist leader also impact state security.

It is likely the expansion of globalization will continue (Inglehart and Norris 31), increasing the flows of information, communication, and people, domestically and internationally. Additionally, climate change will exacerbate migration flows, especially from less developed to more developed countries (Scott 1235). As the world becomes even more progressive, citizen reactions of cultural anxiety, due to perceived feelings of vulnerability and dissatisfaction with the status quo, will also continue. Furthermore, populism has a contagious quality and is likely to spread as vulnerabilities increase (Pappas 35).

As long as populist leaders possess significant resources and unchecked power, populist movements will continue emerging, potentially threatening both state and human security. Moreover, populism can be contagious as political leaders may take note of successful securitization strategies in other countries. Recently, populists have been politically successful, due to the securitization of migrants, in France, Germany, and Hungary. With continued success passing illiberal policies, populist movements and their leaders could eventually overwhelm the liberal world order, resulting in the demise of multilateral institutions, tasked with protecting the rights and political freedoms of minorities, which would diminish both state and human security on a global scale. To protect the liberal world order and to promote human security, liberal democracies must address the concerns and vulnerabilities of their citizens, including those who feel victimized by current economic conditions, and must strengthen the checks and balances which would be used to limit the actions of populist leaders.

## Degrowth ADV

### Warming---AT: Defense

#### Runaway warming causes extinction

Nathan Alexander Sears 21, PhD Candidate in Political Science at The University of Toronto, Former Professor of International Relations at the Universidad de Las Américas, Trudeau Fellow in Peace, Conflict and Justice at the Munk School of Global Affairs, “Great Powers, Polarity, and Existential Threats to Humanity: An Analysis of the Distribution of the Forces of Total Destruction in International Security”, Conference Paper: International Studies Association, 2021 Annual Conference, March/April 2021, https://tinyurl.com/bfbfspzx

Climate Change

Humanity faces existential risks from the large-scale destruction of Earth’s natural environment making the planet less hospitable for humankind (Wallace-Wells 2019). The decline of some of Earth’s natural systems may already exceed the “planetary boundaries” that represent a “safe operating space for humanity” (Rockstrom et al. 2009). Humanity has become one of the driving forces behind Earth’s climate system (Crutzen 2002). The major anthropogenic drivers of climate change are the burning of fossil fuels (e.g., coal, oil, and gas), combined with the degradation of Earth’s natural systems for absorbing carbon dioxide, such as deforestation for agriculture (e.g., livestock and monocultures) and resource extraction (e.g., mining and oil), and the warming of the oceans (Kump et al. 2003). While humanity has influenced Earth’s climate since at least the Industrial Revolution, the dramatic increase in greenhouse gas emissions since the mid-twentieth century—the “Great Acceleration” (Steffen et al. 2007; 2015; McNeill & Engelke 2016)— is responsible for contemporary climate change, which has reached approximately 1°C above preindustrial levels (IPCC 2018).

Climate change could become an existential threat to humanity if the planet’s climate reaches a “Hothouse Earth” state (Ripple et al. 2020). What are the dangers? There are two mechanisms of climate change that threaten humankind. The direct threat is extreme heat. While human societies possesses some capacity for adaptation and resilience to climate change, the physiological response of humans to heat stress imposes physical limits—with a hard limit at roughly 35°C wet-bulb temperature (Sherwood et al. 2010). A rise in global average temperatures by 3–4°C would increase the risk of heat stress, while 7°C could render some regions uninhabitable, and 11–12°C would leave much of the planet too hot for human habitation (Sherwood et al. 2010). The indirect effects of climate change could include, inter alia, rising sea levels affecting coastal regions (e.g., Miami and Shanghai), or even swallowing entire countries (e.g., Bangladesh and the Maldives); extreme and unpredictable weather and natural disasters (e.g., hurricanes and forest fires); environmental pressures on water and food scarcity (e.g., droughts from less-dispersed rainfall, and lower wheat-yields at higher temperatures); the possible inception of new bacteria and viruses; and, of course, large-scale human migration (World Bank 2012; Wallace-Well 2019; Richards, Lupton & Allywood 2001). While it is difficult to determine the existential implications of extreme environmental conditions, there are historic precedents for the collapse of human societies under environmental pressures (Diamond 2005). Earth’s “big five” mass extinction events have been linked to dramatic shifts in Earth’s climate (Ward 2008; Payne & Clapham 2012; Kolbert 2014; Brannen 2017), and a Hothouse Earth climate would represent terra incognita for humanity.

Thus, the assumption here is that a Hothouse Earth climate could pose an existential threat to the habitability of the planet for humanity (Steffen et al. 2018., 5). At what point could climate change cross the threshold of an existential threat to humankind? The complexity of Earth’s natural systems makes it extremely difficult to give a precise figure (Rockstrom et al. 2009; ). However, much of the concern about climate change is over the danger of crossing “tipping points,” whereby positive feedback loops in Earth’s climate system could lead to potentially irreversible and self-reinforcing “runaway” climate change. For example, the melting of Arctic “permafrost” could produce additional warming, as glacial retreat reduces the refractory effect of the ice and releases huge quantities of methane currently trapped beneath it. A recent study suggests that a “planetary threshold” could exist at global average temperature of 2°C above preindustrial levels (Steffen et al. 2018; also IPCC 2018). Therefore, the analysis here takes the 2°C rise in global average temperatures as representing the lower-boundary of an existential threat to humanity, with higher temperatures increasing the risk of runaway climate change leading to a Hothouse Earth.

The Paris Agreement on Climate Change set the goal of limiting the increase in global average temperatures to “well below” 2°C and to pursue efforts to limit the increase to 1.5°C. If the Paris Agreement goals are met, then nations would likely keep climate change below the threshold of an existential threat to humanity. According to Climate Action Tracker (2020), however, current policies of states are expected to produce global average temperatures of 2.9°C above preindustrial levels by 2100 (range between +2.1 and +3.9°C), while if states succeed in meeting their pledges and targets, global average temperatures are still projected to increase by 2.6°C (range between +2.1 and +3.3°C). Thus, while the Paris Agreements sets a goal 6 that would reduce the existential risk of climate change, the actual policies of states could easily cross the threshold that would constitute an existential threat to humanity (CAT 2020).

#### It’ll be rapid, overwhelming adaptation, there’s multiple positive feedbacks AND it causes extinction from food, water, resource wars, ocean collapse, and disease

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Looking back on the history of life on Earth, the main driver of species’ extinctions have been changes in climate over time that species could not adapt to, even when provided long spans of time to adapt. Given the unnaturally fast rate of global warming climate change now occurring, humans would have to adapt to the rapid loss of habitat and food sources, as well as all the other impacts, at an unprecedentedly fast speed. Adding to concerns regarding our survival as a species, pessimists point out that Homo sapiens are the last of several humanoid species (Neanderthals, Homo erectus, etc.) that made Earth their home for millions of years until these prior humanoid species eventually went extinct because they could not adapt to their environment and competition for food.

Why the Concern Now About Our Survival as a Species?

While some scientists started raising concerns about the burning of fossil fuels eventually warming the Earth’s atmosphere as far back as the middle 20th century, a consensus among scientists that global warming is a problem we have to address didn’t form until the later part of the 20th century.

Now that we’re progressing through the 21st century, why are some in scientific circles raising concerns about our near-term survival as a species? In recent years, the effects of global warming have become exceedingly extreme. In fact, from record-breaking heatwaves to unprecedented forest fires to melting polar ice sheets, the effects of global warming are occurring faster than the scientific community had projected they would just a decade or two ago. The concern about our viability as a species on Earth is due to the fast-developing effects of global warming. If we don’t address the causes of global warming or take mitigative actions, it could transform into runaway global warming that would heat up the Earth so rapidly that humans and many other species will likely be imperiled.

Many scientists wrongly had confidence that mankind would come to its senses when faced with the stark reality that our survival as a species is threatened and we’d collectively take actions to avert catastrophic global warming by discontinuing our burning of fossil fuels and replacing them with renewable non-carbon energy sources. However, despite some tepid efforts to cut carbon emissions, such as the 2016 Paris Agreement, it appears that due to a combination of ignorance and a concerted effort by the fossil fuels industry to stop any efforts to move away from carbon-based products, we will likely not address our continuing release of global warming gases into Earth’s atmosphere until it’s too late and the global warming we’ve experienced in recent decades transforms into irreversible and catastrophic runaway global warming.

This will occur because human-caused global warming will eventually trigger natural climate warming feedback loops to take over. At that point, global warming will be like an unstoppable runaway train, as the Earth’s atmospheric temperatures rise to life-threatening levels. These warming feedback loops include such things as releases of global warming gases from melting polar ice sheets and from frozen methane deposits beneath the oceans, as well as the loss of polar ice causing the Earth to absorb more of the sun’s heat energy. All of which will cause additional warming, which then results in additional releases of global warming gases that will cause additional global temperature rises in an unstoppable loop that will continue until the planet is warmer than it has been in many millions of years (long before humans existed).

Such rapid and uncontrollable warming of Earth’s atmosphere could warm the planet by 4 to 5 degrees Celsius (7 to 9 degrees Fahrenheit) within the current century and perhaps eventually lead to a planet that is 8 to 9 degrees Celsius (14 to 16 degrees Fahrenheit) warmer than it was before humans started burning fossil fuels in large quantities starting in the 19th century.

Some might wonder, what’s the big deal if the planet is 4 to 5 degrees Celsius or even 8 to 9 degrees Celsius warmer than it has been as humans evolved on Earth? After all, many parts of the planet routinely experience temperature swings of this magnitude on a daily or weekly basis. There are several ways that rapid global warming on a planetary scale could threaten human survival.

Warming is not evenly distributed. Some areas, including currently farmable land, will warm well in excess of the global average, which would lead to desertification and crop failures. This would obviously imperial humans due to massive food shortages.

Oceans, another major source of food that humans need to survive, are impacted by rising global temperatures, as higher ocean temperatures lead to acidification of ocean water, which will eventually lead to massive die-offs of sea life that provide much-needed food for humans.

Water resources will completely dry up in many arid parts of the world, making those areas uninhabitable.

Dwindling food and water resources will inevitably lead to wars between competing nations that could be catastrophic.

Humans can’t survive at wet-bulb temperatures above 35 degrees Celsius (95 degrees Fahrenheit), even in the shade, as the human body loses its ability to cool itself off. Higher global temperatures and the higher humidity levels that will occur with the higher temperatures could make large parts of the Earth uninhabitable due to wet bulb temperatures that are lethal.

Would Runaway Global Warming Actually Lead to Human Extinction?

It’s a very big step go from runaway global warming to the extinction of all human beings on Earth. Humans possess the intellectual skills necessary to design and build technologies that can help us adapt to climate change. We’re also able to move to places with more hospitable climates. However, some scientists are concerned that humans will not have time to adapt to the quick pace of runaway global warming and some of the impacts will be too harsh for us to survive.

If farmlands and oceans are no longer capable of providing food for humans, where will we turn to obtain life-sustaining food? It is possible that humans could migrate towards the poles and try to farm on land in those areas that is freed up from the ice. However, it is unclear if the currently frozen areas in and around the polar regions will have topsoil suitable for farming. What about freshwater fish? Unfortunately, freshwater lakes and rivers will also undergo acidification that will likely wipe out most or all fish species that can provide humans nourishment. Our only hope might be some sort of synthetic food that is created in factories using basic elements (a technology that is certainly viable).

There will be other life-threatening factors that humans will face in a fast warming world. Massive fire balls from methane releases will create havoc for humans. These fireballs will start enormous forest fires driven by the warmer and in many places a more arid world, which will cause turmoil for humans. A lack of freshwater in areas that undergo desertification will make survival impossible in such areas. Wars over dwindling resources will be fought out of desperation and could end in catastrophe.

The stress of a warmer world will weaken human immune systems. If industrial society collapses or is greatly reduced, healthcare and medicines might become very limited, lowering life expectancy dramatically. Humans that survive all the dangers associated with runaway global warming might succumb to pandemics that will likely sweep the world as opportunistic pathogens take advantage of weakened human systems and cause a large loss of life in the remaining human populations.

#### Defense doesn’t assume simultaneous shocks AND cascading societal collapse

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As part of their discussion of BRIHN Baum and Handoh (2014) note that climate change is the planetary boundary for which the risk to humanity has received most meaningful consideration and they suggest that this attention is deserved. Yet little research attention has been paid to climate change’s extreme or catastrophic effects. Kareiva and Carranza (2018) argue that, despite currently falling outside of the area of high risk, climate change has the clear potential to push humanity across a threshold of irreversible loss by “changing major ocean circulation patterns, causing massive sea-level rise, and increasing the frequency and severity of extreme events… that displace people, and ruin economies.” Even if humanity was resilient to each of these individual impacts, a global catastrophe could occur if these impacts were to occur rapidly and simultaneously.

One scenario that has received comparatively more attention is that of the global climate crossing a tipping point that would trigger environmental feedback loops (such as declining albedo from melting ice or the release of methane from clathrates) and cascading effects (such a shifting rainfall patterns that trigger desertification and soil erosion). After this point, anthropogenic activity may cease to be the main driver of climate change, making it accelerate and become harder to stop (King et al., 2015).

Other scenarios can be discerned from the numerous historical cases in which the modest, usually regional, climatic changes experienced during the Holocene have been implicated in the collapse of previous societies, including the Anasazi, the Tiwanaku, the Akkadians, the Western Roman Empire, the lowland Maya, and dozens of others (Diamond, 2005, Fagan, 2008). These provide a precedent for how a changing climate can trigger or contribute to societal breakdown. At present, our understanding of this phenomena is limited, and the IPCC has labelled its findings as “low confidence” due to a lack of understanding of cause and effect and restrictions in historical data (Klein et al., 2014). Further study and cooperation between archaeologists, historians, climate scientists and global catastrophic risk scholars could overcome some of these limitations by identifying how the impacts of climate change translate into social transformation and collapse, and hence what the impacts of more rapid and extreme climatic changes might be. There is also the potential for larger studies into how global climate variations have coincided with collapse and violence at the regional level (Zhang, Chiyung, Chusheng, Yuanqing, & Fung, 2005; Zhang et al., 2006). However, these need to be interpreted and generalized with care given the differences between pre-industrial and modern societies.

Societies also have a long history of adapting to, and recovering from, climate change induced collapses (McAnany and Yoffee, 2009). However, there are two reasons to be sceptical that such resilience can be easily extrapolated into the future. First, the relatively stable context of the Holocene, with well-functioning, resilient ecosystems, has greatly assisted recovery, while anthropogenic climate change is more rapid, pervasive, global, and severe. Large-scale states did not emerge until the onset of the Holocene (Richerson, Boyd, & Bettinger, 2001), and societies have since remained in a surprisingly narrow climatic niche of roughly 15 mean annual average temperature (Xu, Kohler, Lenton, Svenning, & Scheffer, 2020). A return to agrarian or hunter-gatherer lifestyles could thus have more devastating and long-lasting effects in a world of rapid climate change and ecological disruption (Gowdy, 2020).7 Second, modern human societies may have developed hidden fragilities that amplify the shocks posed by climate change (Mannheim 2020) and the complex, tightly-coupled and interdependent nature of our socio-economic systems makes it more likely that the failure of a few key states or industries due to climate change could cascade into a global collapse (Kemp, 2019).

A third set of plausible scenarios stem from climate change’s broader environmental impacts. Apart from being a planetary boundary of its own, Steffen et al. (2015) point out that climate change is intimately connected with other planetary boundaries (see Table 1). Climate change is thus identified by the authors as one of two ‘core' boundaries with the potential “to drive the Earth system into a new state should they be substantially and persistently transgressed.” This transformative potential was elaborated on in subsequent work exploring how the world could be pushed towards a ‘Hothouse Earth’ state, even with anthropogenic temperature rises as low as 2 °C (Steffen et al., 2018).

The connection between climate change and biosphere integrity (the survival of complex adaptive ecosystems supporting diverse forms of life) is particularly strong. The IPCC is highly confident that climate change is adversely impacting terrestrial ecosystems, contributing to desertification and land degradation in many areas and changing the range, abundance and seasonality of many plant and animal species (Arneth et al., 2019). Similarly, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has reported that climate change is restricting the range of nearly half the world’s threatened mammal species and a quarter of threatened birds, with marine, coastal, and arctic ecosystems worst affected (Diaz et al., 2019). According to one estimate, climate change could cause 15–37 % of all species to become ‘committed to extinction’ by mid-century (Thomas et al., 2004).

Disruption to biosphere integrity can have profound economic and social repercussions, ranging from loss of ecosystem services and natural resources to the destruction of traditional knowledge and livelihoods. For instance, desertification, which threatens a quarter of Earth’s land area and a fifth of the population, is already estimated to cost developing nations 4–8 % of their GDP (United Nations, 2011). Many other rapid regime shifts involving loss of biosphere integrity have been observed, including shifts in arid vegetation, freshwater eutrophication, and the collapse of fish populations (Amano et al. 2020). There is a theoretical possibility of still more profound regime shifts at the global level (Rocha, Peterson, Bodin, & Levin, 2018). However, the contribution of loss of biosphere integrity to GCR is yet to be assessed. Kareiva and Carranza (2018) argue that it is unlikely to threaten human civilization, due both to a lack of plausible mechanisms for this threat and the fact that “local and regional biodiversity is often staying the same because species from elsewhere replace local losses.” However, in their classification of GCRs, Avin et al. (2018) suggest the potential for ecological collapse to threaten the safety boundaries of multiple critical systems with diverse spread mechanisms at a range of scales, from the biogeochemical and anatomical to the ecological and sociotechnological. Note that both these studies were conducted for largely conceptual purposes and should not be taken as rigorous analyses of this risk, this topic warrants further investigation.

3.2. Classifying climate change’s contributions to global catastrophic risk

Climate change's contribution to GCR goes well beyond its impact on the earth system. Taking Avin et al.’s list of critical systems, we note that previous studies have mostly focused on the effects of climate change on physical and biogeochemical systems (e.g. global temperature and sea-level rise) or the lower-level critical systems that are most directly related to human health and survival (e.g. Heath Stress). However, these represent a very limited assessment of risk as it only accounts for climate change as a direct hazard/threat and our "ontological" vulnerabilities to it. A more comprehensive risk assessment must consider the higher-order critical systems threatened by climate change passively (through a lack of alternatives) and actively (through intentional design).

The probability of a global catastrophe is higher when sociotechnological and environmental systems are tightly coupled, creating a potential for reinforcing feedback loops. If environmental change produces social changes that perpetuate further environmental change, then this could actively work against our efforts at adaptation. When this change has the potential to produce significant harm, via human vulnerabilities and exposure, we describe such loops as ‘global systems death spirals.’ These spirals could produce self-perpetuating catastrophes, whereby the energy and resources required to reverse or adapt to collapse are beyond the means of dwindling human societies. Feedback loops like this could thus create tipping points beyond which returning to anything like present conditions would become extremely difficult. Global systems would shift to very different states in which the prospects for humanity would likely be bleaker.

#### It causes existential disease spread

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The mechanisms by which these cascading failures might spread include many of the natural, anthropogenic, and replicator effects identified by Avin et al. (2018), making them harder to contain. At the natural level, climate change involves changes to the global atmospheric and biogeochemical systems and poses other naturally spreading harms, like global ecological collapse. At the anthropogenic level, the global interconnectedness of sociotechnological systems means that while small shocks are easier to recover from, larger shocks can be harder to contain and control. Finally, biological and informational replication can also spread the negative impacts of climate change, from vector-borne diseases and invasive species to climate fatalism and dangerous geoengineering technologies.

Given these numerous spread mechanisms, critical system failures could precipitate global catastrophes. Furthermore, the spiral we have explored is unlikely to be the only set of interlinked systemic disruptions that climate change could initiate (other death spirals could involve bio-insecurity and disease), nor are these the only causal connections between these three systems. Until we understand the nature of such death spirals better, we must act cautiously. We now turn to consider what this would mean.

#### Independently, CO2 causes ocean acidification---extinction

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The biggest extinction event in planetary history was driven by the rapid acidification of our oceans, a new study concludes. So much carbon was released into the atmosphere, and the oceans absorbed so much of it so quickly, that marine life simply died off, from the bottom of the food chain up. That doesn’t bode well for the present, given the disturbingly similar rate that our seas are acidifying right now. Parts of the Pacific, for instance, are already so acidic that sea snails’ shells begin dissolving as soon as they’re born. The biggest die-off in history, the Permian Extinction event, aka the Great Dying, extinguished over 90 percent of the planet's species—and 96 percent of marine species. A lot of theories have been put forward about why and how, exactly, the vast majority of Earth life went belly up 252 million years ago, but the new study, published in Science, offers some compelling evidence acidification was a key driver. A team led by University of Edinburgh researchers collected rocks in the United Arab Emirates that were on the seafloor hundreds of millions of years ago, and used the boron isotopes found within to model the changing levels of acidification in our prehistoric oceans. Through this “combined geochemical, geological, and modeling approach,” the scientists say, they were able to accurately model the series of “perturbations” that unfolded in the era. They now believe that a series of gigantic volcanic eruptions in the Siberian Trap spewed a great fountain of carbon into the atmosphere over a period of tens of thousands of years. This was the first phase of the extinction event, in which terrestrial life began to die out. The study explains that the second phase of the event happened much more quickly. “During the second extinction pulse, however, a rapid and large injection of carbon caused an abrupt acidification event that drove the preferential loss of heavily calcified marine biota," the authors write. So does this study mean we should be especially worried about the phenomenon taking hold today? "Yes," said Dr. Rachel Wood, a professor of carbonate geoscience at the University of Edinburgh and one of the paper's authors. "We are concerned about modern ocean acidification," she told me in an email. "Although the amount of carbon added to the atmosphere that triggered the mass extinction was probably greater than today's fossil fuel reserves, the rate at which the carbon was released was at a rate similar to modern emissions." In other words, the Siberian Traps probably spewed out more carbon in total, but we're spewing out just as fast. And that's overwhelming the planetary equilibrium. "This fast rate of release was a critical factor driving ocean acidification," Wood said. Why? "The rate of release is critical because the oceans absorb a lot of the carbon dioxide (CO2) from the atmosphere, around 30 percent of the carbon dioxide released by humans," Wood said. "To achieve chemical equilibrium, some of this CO2 reacts with the water to form carbonic acid. Some of these molecules react with a water molecule to give a bicarbonate ion and a hydronium ion, thus increasing ocean 'acidity' (H+ ion concentration)." Marine animals whose skeletons are comprised of calcium carbonate—and that’s a lot of them (think snails, coral), which form a crucial part of the food chain—dissolved or couldn’t form in the first place. And that is what’s happening today. "Between 1751 and 1994, surface ocean pH is estimated to have decreased from approximately 8.25 to 8.14, representing an increase of almost 30 percent in H+ ion concentration in the world's oceans," Wood said. That's a major uptick in ocean acidity in a relatively short amount of time, and it's happening because humans have burned fossil fuels like coal, oil, and gas with reckless abandon since the Industrial Revolution. That's fueling climate change, of course, as well as its less-discussed, but potentially equally cataclysmic sibling, ocean acidification. "Scientists have long suspected that an ocean acidification event occurred during the greatest mass extinction of all time, but direct evidence has been lacking until now,” study coordinator Dr. Matthew Clarkson said in a statement. “This is a worrying finding, considering that we can already see an increase in ocean acidity today that is the result of human carbon emissions." Much of marine life is already in grave danger from acidification. It's contributing to the bleaching of coral reefs around the world, and, as mentioned before, it's killing sea snails in the Pacific. If it worsens, acidification could threaten the whole of the marine biosphere, and, obviously, the land-dwelling creatures that depend on it too. In 2013, marine scientists released a "State of the Oceans" report that found that the rate of current acidification was “unprecedented.” They noted that the seas were acidifying faster than any point in the last 300 million years. That study didn’t take into account the new data, of course, but that’s the timeline we’re dealing with: The last time the oceans were so acidic was in the midst of the greatest extinction in the history of the world.

#### Crossing invisible thresholds leads to a Hothouse Earth---causing certain extinction

Ugo Bardi 20, professor of physical chemistry at the University of Florence, “The Science of Doom: Modeling the Future,” Before the Collapse, Springer International Publishing, 2020, pp. 1–29 DOI.org (Crossref), doi:10.1007/978-3-030-29038-2\_1

The problem, in these cases, has a name: “tipping point” [28]—it is something typical of those systems called “complex” which tend to switch rapidly from one condition to another. We will see more about these systems in the next section but, for the time being, it is enough to note that they are very common in the real world. Think of the turkey of the story, it can have two distinct and separate states: a live turkey and a dead turkey. The same two states may occur for the whole of humankind when facing climate change.

Nassim Taleb uses the term “gray swan” for extreme events or conditions that were never experienced before but that might have been statistically predicted. A good example of gray swan is the Tōhoku tsunami that hit Japan in 2011. The tsunami wave was so large that it overcame the coastal defenses built on the hypothesis that such an event was too unlikely to be considered, yet it was not impossible on the basis of the known data on the sizes of historical tsunamis. A different case is that of events totally outside the statistical distribution, true black swans or “dragon kings” as they have been termed by Sornette [29]. In these cases, the system behaves in ways just not predictable from previous historical data. No matter how many times you test a gun by having the hammer hit an empty chamber, you won’t have data about what happens when the hammer hits a live round. The transition between one state and another fits well the concept of the “Seneca Cliff” we are discussing in this book and these considerations apply also to climate predictions. In the heat of the debate, there is a point that the critics of climate science nearly always miss and that sometimes is missed also by supporters. The problem is that the current models are limited in terms of their capability of predicting extreme events. That is, they are not made to foresee the possibility of rapid, unexpected, and catastrophic variations, the concept described here in terms of the “Seneca Effect.”

We can think of plenty of ways that models cannot describe for global warming to become dangerous for humankind, actually deadly. Rising temperatures could lead to the collapse of large fractions of the Greenland and Antarctica ice sheets and that would generate truly catastrophic rises of several meters, even tens of meters, in the average sea levels. Then, of course, there is the “big one” in climate change: the tipping point that could irreversibly propel the Earth’s climate system to the condition known as “Hothouse Earth” (sometimes “Greenhouse Earth”) with average temperatures of some 5–8 °C higher than the present ones, no icecaps, no continental glaciers, a sea level rise of tens of meters, partial deoxygenation of the atmosphere. In the past, these conditions led to huge mass extinctions and, in some cases, to the near death of the whole ecosphere. The climatologist James Hansen even hinted at the possibility of a runaway greenhouse effect [30] that could lead the Earth to become a planet similar to Venus: with no life, an atmosphere composed mainly of CO2 and sulfuric acid, and temperatures in the hundreds of degrees °C (now that would be a true Seneca Cliff!). Fortunately, the current knowledge of the physics of the Earth’s atmosphere indicates that the Venus scenario is unlikely, perhaps impossible [31]. But the mere fact that these possibilities exist shows that we could be playing Russian Roulette with the Earth’s climate.

All that is well known in the scientific debate but catastrophic tipping points are conspicuously missing in the political debate. The risk is sometimes hinted at but never given full attention, probably because scientists have been afraid of being branded as catastrophists if they were to make their worries public. They seem to have been practicing a kind of self-censorship that makes them avoid stating their worst worries in public [32]. At least so far, the whole discussion seems to be governed by this kind of self-censorship and we do not know what could happen if the concept of climate catastrophe were to gain the center of the debate. James Schlesinger is reported to have said that “people have only two modes of operation: complacency and panic” and it is not obvious that moving the discussion to panic mode would lead to the best choices in order to avoid a climate disaster. How we will manage to deal with the problem, if ever we will, is all to be seen.

Overall, we can apply to models Shakespeare’s quote from Hamlet, “Be thou as chaste as ice, as pure as snow, thou shalt not escape calumny.” We only need to change a few terms and we obtain: “Be thou as precise as the 5th decimal place and as accurate as better than 1%, thou shall not escape the fact that thy model is an approximation.”

### Warming---AT: Defense---Extra

#### The combination of warming effects is an existential threat

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7.6.1 Deadlines and Impacts

There is a collective effort to specify the most likely deadlines by which the planet’s average temperatures could exceed 3 °C or 4 °C, maintaining the current trajectory of emissions and deforestation. Projections converge on the third quarter of the century, as shown below:

1. As seen above (Fig. 7.8), the Global Carbon Project (GCP) estimates that, maintaining the 2016 level of CO2 emissions, there is a 66% chance of reaching a global warming of 3 °C by 2069.

2. Richard A. Betts and colleagues (2011) project that our currently fossil intensive scenario “would lead to a warming of 4°C relative to pre-industrial during the 2070s. If carbon-cycle feedbacks are stronger, which appears less likely but still credible, then 4°C warming could be reached by the early 2060s in projections that are consistent with the IPCC’s ‘likely range.’”

3. Xu and Ranamathan (2017) affirm that, with unchecked emissions, “there is a low probability (5%) of warming becoming catastrophic [>3°C] by 2050.”

Many scientists, including Kevin Anderson (2011) and the teams from the Potsdam Institute for Climate Impact Research (2012), Carbon Brief (McSweeney 2018), and the project High-End cLimate Impact and eXtremes (HELIX), supported by the European Commission (Richardson & Bradshaw 2017), attempt to describe the world created by a global average warming between 3.1 °C and 4.8 °C above the pre-industrial period (scenarios 3 and 4). It is very difficult to imagine such a world, almost unrecognizable to the world in the twentieth century, but it is possible to highlight some of its most likely features:

1. A dramatic increase in the intensity and frequency of high-temperature extremes in Tropical South America, North and Central Africa, Mediterranean, and the Middle East (4 °C) (Potsdam 2012).

2. “The warmest July in the Mediterranean region could be 9°C warmer than today’s [2012] warmest July” (4 °C) (Potsdam 2012).

3. An increase of about 150% in acidity of the ocean. The death of entire coral reef ecosystems could occur well before 4 °C is reached (Potsdam 2012).

4. Global marine heat wave days per year multiply by 41 (3.5 °C) (McSweeney 2018).

5. Probability of an ice-free Arctic summer at least once before hitting temperature limit (3 °C) = 100% (McSweeney 2018).

6. Probability of an ice-free Arctic summer in any 1 year (3 °C) = 63% (McSweeney 2018).

7. Average drought length (3 °C) = 10 months; Eastern Europe = 8 months; Southern Europe (3 °C) = 12 months (McSweeney 2018).

8. Proportion of living creatures projected to lose over 50% of their climatic range (4.5 °C) (McSweeney 2018): invertebrates = 68%; vertebrates = 44%; plants = 67%.

9. An estimated 1.8 billion people will potentially reach unprecedented levels of vulnerability to food insecurity (4 °C) (Richardson and Bradshaw 2017).

10. The most serious of all these catastrophic impacts anticipates and introduces the next chapter. It is the widely shared opinion in the scientific community that a 4 °C warmer world “would be an interim temperature on the way to a much higher equilibrium level” (Anderson 2011). In this case, the planet’s climate system would be doomed to evolve, driven by positive feedback loops, toward a global warming above 5 °C. As mentioned above, this warming has been categorized “as ‘unknown??’, with the understanding that changes of this magnitude, not experienced in the last 20+ million years, pose existential threats to a majority of the population” (Xu and Ramanathan 2017). And it should be remembered that the authors also add: “The question mark denotes the subjective nature of our deduction and the fact that catastrophe can strike at even lower warming levels.”

#### Warming definitely causes extinction

Kumar et al. 21, Department of Civil & Environmental Engineering, Birla Institute of Technology, “1 - Climate Change and Existential Threats,” Global Climate Change, edited by Suruchi Singh et al., Elsevier, 01/01/2021, pp. 1–31 ScienceDirect, doi:10.1016/B978-0-12-822928-6.00005-8

Climate change is associated with a global rise in temperature all over the world. The increase in temperature has become a common phenomenon since 1850. The period between 1850 and 1900 is called as “preindustrial” period. A global increase of more than 1.5°C in temperature was reported above preindustrial levels (IPCC, 2007). The temperature rise could be estimated to be in the range of 1.8 to 4°C for the 21st century (Solomon et al., 2007). The increase in temperature is called global warming, but the term “climate change” describes the climatic effects additionally caused because of the temperature rise. Climate change caught the sight of the public when the effects became pronounced.

The primary reason for climate change is the “greenhouse effect” (Crowley, 2000). A rise in temperature of Earth’s atmosphere caused because of a rise in the number of greenhouse gases (GHGs) such as methane, nitrous oxide, water (in the form of moisture), and carbon dioxide, in particular, is referred to as greenhouse effect (Tett et al., 1999). Interestingly, this process is critical for the survival of life on the planet (Kweku et al., 2018), because of the need to trap heat, i.e., incoming solar radiation, to provide energy for maintenance of various nutrient cycles and other critical processes to sustain life. In the absence of the greenhouse effect, the incoming solar radiation would get reflected, and there would not be any associated heat trap, conservation of energy, and the associated life support (Kweku et al., 2018).

The process of the greenhouse effect is a natural process (Crowley, 2000). There is a natural release of GHGs by processes such as volcanic eruptions, animal respiration, decomposition of detritus, and others. However, the problem arises with the involvement of human activities in the scenario, disturbing the homeostasis and existing equilibrium (Stott et al., 1999; Crowley, 2000). Anthropogenic activities have enhanced the heat trap, creating an imbalance in nature. Burning of fossil fuels, via automobiles and industries, has been ascribed as the significant reason behind the release of GHGs (Santer et al., 1996). Interestingly, the role of oil companies must be taken into account because they put a lot of investment to suppress the fact that fossil fuels are positively correlated with climate change (Holden, 2020). Such a denial of inevitability enhanced the severity of climate change and associated problems. Human beings not only created problems for the environment, but also their self-existence is at stake.

The GHGs could be impinged into the atmosphere in various ways (Kweku et al., 2018). The burning of fossil fuels is responsible for adding oxides of carbon, nitrogen, and sulfur into the atmosphere (Dignon and Hameed, 1989). Methane is added into the atmosphere by cattle waste, traditional rice farming, exploration of fossil fuels, and deserted oil wells (Kirschke et al., 2013). CFCs (chlorofluorocarbons) and HFCs (hydrofluorocarbons) have been mainly used in aerosols and refrigerators (Gladwin et al., 1982).

Deforestation has given a boost to the process of climate change (Kweku et al., 2018). The forests, which act as the lungs for our Earth, have been slaughtered in an unprecedented manner. Deforestation perpetuated the rise in CO2 levels, which were once taken care of by the plants and trees. Climate change has melted the polar ice caps and glaciers across the globe, causing the release of permafrost-trapped GHGs (Polyakov et al., 2010; Oppenheimer and Anttila-Hughes, 2016).

With the increasing population, the production of GHGs has enhanced tremendously. The need to fulfill the increasing desires of the growing population has been a significant contributor to climate change (Satterthwaite, 2009). Unparalleled industrial manufacturing, unprecedented motor vehicle growth, and unscientific agricultural production have added to the persistent problem. Burning of wastes such as crop residues, household wastes, e-wastes, and others has become a common problem worldwide, and all of these factors mentioned earlier have contributed to climate change (Watson et al., 1992).

2. The existential threats

Climate change has given birth to several problems. The innumerous threats have started to tighten its grip on the ecosystem’s existence and, if left unchecked, would be fatal. The various threats, along with initiatives by various countries across the globe, have been discussed in the following sections.

3. The rise in temperature and global warming

The increase in temperature of Earth’s atmosphere has been referred to as “global warming.” The process did not occur overnight. The rise of temperature has been gradual, spread over several decades. The increase in GHGs, inclusive of CO2, CH4, and N2O, has been the forerunner cause of global warming (Kweku et al., 2018). Each gas has a different global warming potential. If CO2 is considered to have a potential of 1.0, the global warming potentials of CH4, N2O, HCFC-22, and CFC-12 are 10, 180, 410, and 3700, respectively (Lashof and Ahuja, 1990). The US Environmental Protection Agency had reported 6677 million metric tons of CO2 equivalent greenhouse gases emitted into the environment in 2018. Carbon dioxide contributed to around 81% of the total emissions, while methane, nitrous oxide, and fluorinated gases (hydrofluorocarbons and sulfur hexafluoride) were ranked second (10%), third (7%), and fourth (2%), respectively, on the emission list. The various sources and their contributions to release of these gases are represented in Table 1.1 (Ward, 2015).

[TABLE 1.1 OMITTED]

Unsurprisingly, global warming was left unchecked and gave rise to problems such as increment in sea level, acidification of oceans, and boosted frequency of disasters (Kweku et al., 2018). A study has reported that the frequency of hot and sweltering days would double in the period from 2013 to 60, when compared with 1961–90, if we consider the rise in temperature to be 2°C. Interestingly, as could be expected, the cold days would decrease by 50% for the same period (Giannakopoulos et al., 2005). Additionally, the 2°C rise would alter the rainfall pattern, and the number of dry days would increase. They also reported that the precipitation would be more intense, whenever it decides to show up (Giannakopoulos et al., 2005). Such major changes would have a significant impact on several factors in consideration. The energy demand would rise because of the need to heat (or cool) workplaces, transportation, and houses (Rodríguez, 2005). The increase in hotter and drier summer would result in greater wildfire occurrences, which might be difficult to control (Moriondo et al., 2006). There would be a rise in water shortage, which might affect plants, animals, and humans. Drought periods would increase manifold (Giannakopoulos et al., 2005).

Correspondingly, the increase in temperature caused because of global warming would result in a drastic reduction in human productivity. The creation of heat stress would reduce the cognitive ability and working hours (i.e., working potential), by imposing biological constraints on working intensity (Carleton and Anne, 2018). There would be an accompanied reduction in labor productivity, affecting the economy holistically (Day et al., 2019). Additionally, the increase in temperature would increase the sea level and trigger biodiversity loss, which has been discussed in later sections.

Surprisingly, a global rise in temperature can affect agriculture in contrasting ways (Melillo et al., 2014). Depending upon the optimal growth condition for various crops, temperature rise might affect it in varying ways. Some areas may get benefitted from warmer temperatures and vice versa. An increase in CO2 levels may be conducive to some plants, for better growth. However, alterations in the weather pattern and increase in extreme events such as drought or flood and pest attack would harm the crops (Gornall et al., 2010). Crop yields are bound to decrease, intensifying the persistent problem of food security (Backlund et al., 2008). Unsurprisingly, the crop yield response was negative toward CO2 rise and temperature increase (Giannakopoulos et al., 2005). Additionally, the warmer temperature would have an adverse effect on livestock and fisheries (Melillo et al., 2014).

Several cities have initiated innovative approaches to tackle rising temperatures. Paris Agreement was signed under the aegis of the UN Framework Convention on Climate Change. It was determined to limit the temperature rise to 1.5°C above preindustrial levels to reduce the risks and damages associated with climate change. A climate leadership group named C40 cities are leading in handling urban heat via the cool city network (Cippec et al., 2019). Several countries have pledged to fund to decelerate the temperature increase apart from implementing climate-friendly and climate-smart technologies such as cool roofing and cool neighborhood systems. South Africa commenced a detailed study of the causes and effects of urban heat. France, Italy, and Spain have mapped heat prevalent in their cities and the vulnerable populations, and they are working on providing cool places to their citizens. Japan has launched the construction of cool pavements, which reflects sun rays. Many countries have built cool roofs to decrease infrastructural warming (Li et al., 2017; Shickman, 2017).

4. Melting of glaciers and polar icecaps

Snow, a low-temperature product, would vanish with an enhancement of temperature. As a result, glaciers and permafrost in the mountains and the polar ice caps become very sensitive to atmospheric warming. Additionally, mass wasting is sensitive to slope steepness at a higher altitude, aggravating glacial loss (Haeberli and Beniston, 1998). The later part of the 20th century and 21st century has seen significant changes in the cryosphere world. Striking differences have been seen in similar decadal pictures depicting glacial changes (Haeberli and Beniston, 1998; Haeberli, 2010).

It is essential to give special emphasis to the protection of glaciers and polar ice caps. They are involved in the water cycle, and alterations would affect the process as a whole. The mountains are involved in orographic rainfall, a very critical process in the formation of clouds and associated precipitation. This holistic process has an indirect role in the maintenance of heat balance and moisture transfer. The mountains are involved in large-scale airflow patterns, and perturbations to such cycles would be devastating (Haeberli et al., 1993; Fitzharris et al., 1996). With a reduction in the cryosphere coverage, albedo (i.e., surface reflectivity of sunlight) gets diminished, initiating a positive feedback to melting and a negative feedback to thawing (Beniston et al., 1997).

Climate change is modifying the permafrost distribution patterns, and the natural adjustment of glacial processes with time is getting impossible (Haeberli and Beniston, 1998). The Alps have seen nearly 40% loss of surface area and 50% loss of volume of the glacial belts, when compared with the preindustrial timeline, referred to as “Little Ice Age” in the report. The process of glacial loss boomed in the latter part of the 20th century (Haeberli and Beniston, 1998).

Glaciers are a source of freshwater in the form of streams and rivers, for the communities through which they flow. Such freshwater is utilized for domestic use, irrigation of farmlands, and hydropower generation (Eriksson et al., 2006). Although melting of these glaciers would boost water availability for a short period, detrimental effects are destined in the long run. The ecosystem would get uprooted. Additionally, there would be an increase in sea level, which is a disturbance to the equilibrium, and ill-effects would be bound to follow (Mei’e et al., 1985).

It was reported that 30%, 50%, and 50% of water resources are derived from ice melting in the eastern, central, and western Himalayas, respectively, and the ratio goes as high as 80% for the Karakoram. The presence of such large mountain ranges is, therefore, critical for sustenance of livelihoods of a humongous human population and the complete ecosystem. The mountains play a critical role in the weather pattern for the areas surrounding it (Beniston et al., 1997; Xu et al., 2009). It has been reported that the process of deglaciation would result in changes in hydrological characteristics of the streams and rivers, increment in the size and volume of glacial lakes, and a rise in risk associated with floods. Furthermore, agriculture, industries, animal and plant health (including human health), and biodiversity would get adversely affected (Shrestha et al., 2000; Eriksson et al., 2006).

It was proposed to impinge chemicals into the atmosphere to block incoming solar radiation. Some also proposed to pump seawater on polar ice caps, with the idea of accelerated freezing (Cox, 2018). Nevertheless, these ideas were rejected based on the risks and humongous costs involved. Lately, it has been proposed to build underwater walls beneath glaciers using robots and pumping chilled water beneath ice via tunnels to thicken the layers and prevent their ocean fall (Cox, 2018).

5. Rise in sea level, sea shape, and sea composition

The rise in sea level caused by cryosphere melting has worldwide, long-lasting, and irreversible effects. It was reported that, by 2018, global mean sea level had increased by 21–24 and 8.1 cm compared with 1880 and 1993, respectively (Lindsey, 2019). It was also stated that the rise in sea level was three times quicker during 2005–15 compared with 1993–2014 (Yi et al., 2017).

The sea level rise is changing the coastlines across the globe and would result in flooding of coastal areas and a number of small islands. The existence of the Maldives, a small archipelago located to the southwest of the Indian subcontinent, is hugely threatened by the rise in sea level and is predicted to be entirely submerged by 2100 (Gagain, 2012). Apart from the Maldives, a number of islands would get submerged, such as Tuvalu, Nauru, and the Marshall Islands located in the Pacific Ocean (Allen, 2004; Tim Lister, 2012; Letman, 2018). Fiji, Sri Lanka, Kiribati, and Mauritius are also reported to be at extreme threat (Leatherman and Beller-Simms, 1997).

The rise in sea level would result in saltwater intrusion of surface waters, erosion of coasts, and destruction of arable land near the coasts. Furthermore, there would be accompanied loss of wetlands and an increase in the water table (Noone, 2013). Damage to arable land and freshwater supply would affect agriculture, and the households living in the vicinity of the coasts would be devastated (Gornitz, 1991).The frequency of hazards, such as storm surges, would increase due to sea level rise (Allison et al., 2015). The increase in storm surges could also be an outcome of the increased occurrences of cyclones, hurricanes, and typhoons (Kossin et al., 2017). Climate change–induced increment of sea surface temperatures is the possible cause of intensification of cyclone-related storms (Gillett et al., 2008). The size of storms would worsen the damage caused because of storm surges. However, it is interesting to note that some regions may be at a greater risk depending on the storm intensity, the number of people involved, and the built-up infrastructure under consideration (Rahmstorf, 2007, 2017). There would be episodic flooding of the coasts, which may penetrate inland to a great extent (Gornitz, 1991). Additionally, the infrastructure built across the coastal areas, such as roads, houses, bridges, power plants, and others, would be damaged because of the rise (Lindsey, 2019). Correspondingly, there would be high costs involved in the construction of infrastructure to prevent damage to the existing infrastructure.

Unsurprisingly, the marine biodiversity would be negatively affected and result in significant biodiversity loss (Barnes and Kaiser, 2009). There would be alterations in the habitat of the species thriving in the coastal regions to such an extent that these habitats may get completely destroyed. Species of fauna belonging to arthropods, mollusks, chordates, and so on and floral species such as mangroves, grasses, and so on are bound to get affected by a rise in sea level. The habitat loss for such a large number of species would result in drastic alterations to the existing biodiversity (Barnes and Kaiser, 2009; Cheung et al., 2009).

Interestingly, the addition of surplus freshwater, via the melting of glaciers and polar ice caps, would cause significant changes in the composition of salty seawater. There would be changes in density, conductivity, pH, salt concentration, and freezing point of water, which would have a significant effect on a global scale. The thermohaline circulation would see significant alterations due to the changes in the density of water (EIS, 2020). Thermohaline circulation, also called ocean conveyor belt, plays a vital role in maintaining a heat balance across the planet. Alterations in the circulation would affect the equilibrium and may initiate central heating and polar cooling (Marotzke, 2000; Berwyn, 2018). Weather patterns may change worldwide due to changes in the ocean conveyor belt. This would inevitably strengthen the problems associated with climate change.

Oceans have been described as great reservoirs of carbon dioxide and have acted as a natural control mechanism for the greenhouse effect. With the increase in global temperatures, warming of oceans would occur. The heating up of water bodies would cause a release of the stored carbon dioxide (Tsai and Yau, 1990). This would reinforce the greenhouse effect, creating a positive feedback loop. However, it was reported that an increase in carbon dioxide concentrations might boost ocean acidification. There would be a production of carbonic acid and depletion of carbonate ions. Such depletion would prevent many marine organisms from building skeletons and shells. Coral bleaching, i.e., removal of algae from the coral polyps, would occur. Coral reefs are said to be the rainforests of the oceans. As a result of coral bleaching, marine biodiversity loss would occur on a very large scale (Hoegh-Guldberg et al., 2007; Guinotte and Fabry, 2008). Sadly, at deeper levels, i.e., between a depth of 250 and 450 m, the carbon dioxide levels are increasing twice in comparison with the surface waters (Glick, 2020), and this would be devastating for the animals and plants thriving at greater depths in the oceans.

Various countries are trying to cope with rising sea levels. Coastal cities in the United States are building seawalls and drainage systems, while people living in the island nations are migrating to higher locations. The city of Boston has set up an elliptical tower to withstand strong winds and storms. A flood wall has been built in Manhattan. Miami Beach is increasing the height of its roads by 2 feet to prevent flooding. Many cities are building pumps to drain out stormwater. Florida has upgraded sewage systems to prevent stormwater seeping into prevailing drainage systems. However, these are options to cope with a rise in sea level and do not help prevent it (Amadeo, 2020; Sea Level Rise organisation, 2020). Many countries are trying to decrease the warming of the atmosphere and hydrosphere. They are reducing greenhouse gas emissions and trying to capture the existing greenhouse gases persistent in the atmosphere. These methods include carbon sequestration via protecting the forests, wetlands, and peatlands from destruction, and carbon capture and storage technologies (Amadeo, 2020). Natural infrastructure is being upgraded in several coastal cities by upgrading existing beaches, mangroves, coral reefs, and salt marshes (Sea Level Rise organisation, 2020).

6. Hazards of climate change

The number and frequency of hazards and extreme weather events such as heat waves, forest fires, droughts, floods, cyclones, and tornadoes caused by climate change are expected to rise shortly.

7. Forest fires

The previous decade saw incidences of humongous wildfires. This could be exemplified by the fact that wildfires burned more than 5.5 million acres of forests in 2016, in the United States alone. This destruction was greater than 10 million acres in 2015 (Daley, 2017). Forest fires of Australia have become everyday news (Beer and Williams, 1995; Lucas, 2005). The year 2019 saw one of the most heart-breaking forest fires of Amazon rainforests.

It has been reported that, among several other reasons, increased warmer and drier periods caused by climate change have resulted in forest fires. They are further boosted by the drought-like situation and a longer fire engulfing season (Wehner et al., 2017). It has been projected that an increase of 1°C in temperature would pump an enhancement of 600% of burned forests in the western part of the United States (Vose et al., 2012). The increase in risks related to fire and an extended fire season, in the southeast United States, would ignite 30% more than fires ignited by lightning, by 2060 (Vose et al., 2018). The involvement of human beings reportedly causes 84% of wildfires. Once the fire is put on, the warmer temperature and drier conditions help spread the fire making it extremely tough to put off (Daley, 2017).

Fire is significantly affected by four factors—fuel, ignition, weather, and anthropogenic activity (Johnson, 1992; Swetnam, 1993). The weather pattern is dynamic because of Earth’s rotation, solar input, and atmospheric variations. However, the increase in anthropogenic GHGs in the atmosphere has been intensifying the alterations in the weather pattern and boosting fire activities (Thornes, 2002; IPCC, 2007).

It has been reported that the spatial extent of extreme fire conditions would increase extraordinarily, even in countries lying in the temperate zones, such as Russia and Canada (Stocks et al., 1998). They also stated that forest fires would start earlier every year, intensifying the damage caused. Furthermore, it may expand in its extent in the months of June and July (Stocks et al., 1998). The increase in the burned area may increase by 74%–118%, by the end of the 21st century, in Canada alone (Flannigan et al., 2006). It was suggested that fires caused by lightning would rise by 44%, and there would be an enhancement of burned area by 80% by the end of this century in the United States alone (Price and Rind, 1994). Additionally, they stated that lightning-induced ignition would add to atmospheric warming.

Fire intensity is measured in kW/m and is calculated by the amount of energy released at the fire front per unit length of the line of fire (Flannigan et al., 2006). Climate change is likely to affect the fire intensity by decreasing moisture content in trees (fuel to fire), increasing wind speed (a boost to fire), and increasing fuel load (Flannigan et al., 2005). Determination of fire intensity becomes vital in the scenario of enhanced efforts involved in putting out fires and to make the fire extinguishing crew safe from dangers of exceptionally intense fire. Additionally, fire intensity could also help in the estimation of vegetation mortality in case of occurrence of forest fire (Hely et al., 2003). A tremendous enhancement in fire intensity was reported in preliminary work in some fuel types (Johnston, 2001).

Forest fires are likely to affect biodiversity by altering species habitat, enhancing the problem of air pollution, loss of significant forest resource, damaged ecosystem, loss of infrastructure found in the vicinity to forests, and displacement of communities located in the forests. Correspondingly, it becomes essential to protect the ecosystem and people living near the fires to minimize the damage. A lot of funding may go into putting out the fires, neglecting the low success to failure ratio. For example, Canada alone spends more than 500 million dollars to suppress these fires. In the scenario of an increase in forest fires, the costs would rise unprecedentedly (Flannigan and Van Wagner, 1991; Flannigan et al., 2005).

Considering the immensity of damage that forest fires could cause, Integrated Forest Protection Scheme was implemented in various states of India. It included constructing fire lines and watchtowers, provisioning of fire-resistant clothes and wireless sets, and training the various stakeholders involved along with the firefighters (NIDM, 2012). European Forest Fire Information System has been used to facilitate early warning in the event of a forest fire. European Forest Fire Tactical Reserve aids in coordinating the response to the forest fire relief. European Civil Protection Mechanism involves firefighting via ground and aerial routes (Wilkinson and Zimmermann, 2014).

8. Heat waves

The frequency and intensity of hot days are increasing on a yearly basis. In the previous decade, record hot days were seen twice in comparison with record cold days across the United States, the occurrence of which was even in the 1950s. The heat waves have been increasing since the 1960s (Abatzoglou and Barbero, 2014). Heat waves have become a common occurrence, and we cannot deny the role of climate change (Diffenbaugh and Scherer, 2013; Vose et al., 2017). It has been reported that the number of days with temperatures above 100°F would double, and the number of days above 105°F would triple in the days to come (Dahl et al., 2019). The heat waves have become super long-lasting since the previous decade (Habeeb et al., 2015). There could be a 4–20 times increase in extreme heat conditions by the end of the 21st century (Dahl et al., 2019). Extreme heat could also be affected by other factors. For example, Dust Bowls are considered to intensify daytime warming throughout the central part of the United States (Abatzoglou and Barbero, 2014). Cropland intensification has contributed to a cooling effect in the daytime temperatures (Mueller et al., 2017).

Extreme heat poses several threats for the animals and plants thriving in the different ecosystems (Sherwood and Huber, 2010). There could be an outbreak of numerous disasters. Drought and wildfires may follow in the situation of excess heat. Heat island effect could be a possible outcome in different cities and towns. The infrastructure built across the human habitations would add on to the problem of heat, pushing it toward extremities. Interestingly, humid conditions aggravate heat stress (Raymond et al., 2017). In the situation of skin humidity crossing 90%, it would be difficult for humans to cool down by releasing sweat (Sherwood and Huber, 2010). This would pose a threat to the people living in such conditions and the associated ecosystem (Oudin Åström et al., 2011). Human health would be at a great risk. Diseases and deaths may follow (Anderson and Bell, 2011; Xu et al., 2012; Schmeltz et al., 2015). Additionally, it would decrease the productivity of human beings, which would affect the economy adversely. Apart from health, there would be extreme pressure on the energy sector to mitigate excess heat. Energy demand would increase, enhancing pressure on fossil fuels, which would consequently strengthen global warming. Technological advancement and economic development have somehow handled the problem of excess heat, but it is difficult for the poor to handle excess heat (Davis et al., 2003). The role of government becomes critical to increase timely communication of extreme heat-related events and provide mitigation techniques to those unable to afford costlier technologies. Reduction in GHGs, afforestation, and development of energy-efficient technology are the needs of the hour. France brought about a national action plan for tackling heat waves. The plans are inclusive of heat forecasting and warning system, health levels monitoring, infrastructural changes, and special care of the senior citizens. Lately, many European countries have implemented plans to tackle issues related to heat stress (Michelozzi, 2004; Michelon et al., 2005).

9. Drought

A drought is a natural event involving an extended period of a water shortage caused because of the absence of adequate precipitation for long (Wilhite and Glantz, 1985; Mishra and Singh, 2010). Droughts could be characterized by their duration, frequency of occurrence, and intensity (Mishra and Singh, 2010). Droughts have been classified into meteorological, hydrological, or agricultural droughts, depending upon their impact on the hydrological cycle (Sheffield and Wood, 2008; Duan and Mei, 2014; Leng et al., 2015).

Lack of rainfall for an extended period (weeks to years) is called meteorological drought. Reduction in groundwater and a decrease in streamflow causes hydrological drought and could be a consequence of meteorological drought. Loss of soil moisture over a period of time, caused because of the absence of precipitation, is known as agricultural drought. All kinds of droughts could be deleterious for nature, including humans. This could be exemplified by the increase in water scarcity in the scenario of below-average water availability in water bodies. It is accompanied by an increase in water demand. The need for irrigation and other household activities propels humans to extract more water from deeper levels, damaging the ecosystem (Wisser et al., 2010; Leng et al., 2015). Droughts have been given the topmost position among the natural hazards taking into consideration the extensive coverage, the large population affected, and the monetary losses involved (Wilhite and Glantz, 1985; Wilhite and Buchanan-Smith, 2005).

Climate change could prove to be a great contributor to increased occurrences of drought (Dai, 2013; Duan and Mei, 2014). An increase in global temperatures would enhance the evaporation of water molecules. This, combined with a scarcity of water, makes the problem severe and threatening (Sheffield and Wood, 2008). There could be the creation of a vicious circle where drought dries up soil and reduces flora cover, and is succeeded by a decrease in precipitation, further resulting in drought. Droughts are, therefore, bound to increase in frequency and intensity, with the occurrence of climate change (Leng et al., 2015). Determination of the impact of climate change on different regions becomes vital to identify the type of drought that may occur soon (IPCC, 2007; Leng et al., 2015).

It has been estimated that droughts may increase in the frequency of occurrence and affect the people for extended periods. An increase of temperature by 3°C may strengthen the intensity, duration, and frequency of agricultural droughts. An increase in 1°C in the river basins may result in strengthening of intensity and duration of hydrological and meteorological drought (Leng et al., 2015).

The droughts of 2008–09 in China affected more than 10 million people. They struggled with a shortage of water, and monetary loss was calculated to be greater than $2 billion (Yang et al., 2012; Zhang et al., 2012). There were far-reaching consequences in terms of ecosystem damage, agricultural loss, and disruption of societies, apart from economic disaster (Zhang et al., 2012). 81% of the United States had to face drought-like situations in 2012. Droughts are likely to affect agriculture and enhance food security problems. This would result in famine, forced migration, and social unrest. Droughts may give a boost to the occurrence of forest and bush fires across the globe. Energy demand would increase during droughts, putting pressure on the already struggling energy sector. Droughts might decrease forest productivity when trees fail to face high stress, and their resilience levels diminish. Additionally, forests facing drought stress might be damaged by insects and diseases, the life cycle of which incorporates warm and dry conditions (Volney and Hirsch, 2005).

India implemented the “drought-prone area program” to tackle the persistence of drought in a number of districts across the country. The various measures included watershed management program, soil moisture conservation, afforestation, water harvesting, restructuring cropping patterns, diversifying agricultural system, implementing minor irrigation, and constructing canals (Mwinjaka et al., 2010).

10. Floods

Accumulation of water on lands, which are generally dry, is called as flood. It is normally caused by river water overflow, tidal water overflow or excess of precipitation (Smith and Ward, 1998; Brázdil et al., 2006; Ranger, 2011). Floods could be classified into river floods, coastal floods, and flash floods. River floods are an outcome of water flowing above its natural bank, causing inundation of nearby inhabited lands. Coastal flood is an outcome of a coastal storm or storm surge. Flash floods are caused by an excess of rain in a very short span of time. Additionally, urban floods could arise by any of the reasons causing floods, and poor drainage aggravates the situation. Recently, climate change has been a significant contributor to flood occurrences (Rodríguez, 2005; Seneviratne et al., 2012; IPCC, 2014a).

Climate change has affected water-related factors such as precipitation and snow melting in glaciers, causing floods (Haeberli, 1983; IPCC, 2007; Kay et al., 2009). The link between climate change and floods can be confirmed by an increase in the frequency and intensity of floods over the previous decade (Milly et al., 2002; Hirabayashi et al., 2008). A number of factors could be involved in climate change, causing floods (Christensen and C, 2003; Lehner et al., 2006). The increase in frequency, intensity, and duration of precipitation enhanced flood occurrences (Dankers and Feyen, 2008; Raff et al., 2009). Higher temperatures heat the air, and warmer air has been reported to hold a more considerable amount of moisture. Consequently, the air has been reported to hold 4%–27% more of moisture in the United States compared with the beginning of the 20th century (Douglas et al., 2000; Easterling et al., 2017). A study by the National Oceanic and Atmospheric Administration (NOAA) has determined that rains have been 10%–40% more intense as a result of climate change (NOAA, 2016). Substantial precipitation occurrences might triple by the end of the century. It would increase the potential for flood events. A rise in temperature would boost the melting of snow from glaciers. Additionally, such snow melting would be boosted by frequent rains coming from warmer atmospheric conditions. Rains accompanied by melting snow would cause floods.

Climate change is enhancing the frequency of storms, hurricanes, typhoons, and cyclones across the world because of the ability of warmer parcel of air to hold more moisture (Seneviratne et al., 2012; McClearn, 2018). Sadly, the frequency of these destructive hurricanes and cyclones would rise by 80% by the end of the century. Such storms would bring more substantial precipitation initiating catastrophic floods (USGS, 2019). Additionally, more energetic storms may aggravate storm surges and high tides, which help them, penetrate farther inland. As already stated, climate change would bring about a rise in sea level, enhancing storm surges and high tide floods (NOAA, 2018). These floods have doubled over the past 30 years in the United States alone. These are predicted to increase by more than 10 times in the next few decades (Carter et al., 2018).

Multiple countries have implemented efficient strategies to tackle the problem of floods. An Integrated Model for Flood Management was implemented in Nigeria with the help of which the authorities have facilitated information related to flood warning and flood forecasting to the public. They have also incorporated safety and rescue initiatives. Additionally, they brought about a three-step strategy of retaining, storing, and draining rain and floodwater. The precautionary principle was taken into account when considering flood prevention. Dams, levees, embankments, and flood diversion systems were incorporated to decrease the incidences of flooding. Flood plain zonation and regulation was performed to conserve the natural resources in flood plains. A compensation system for the flood victims was kept in mind while framing the prevention strategy (Joshua Oyebode, 2018). Interestingly, reusing the flood water to tackle water scarcity could be taken into consideration during the formulation of an integrated approach for floodwater management.

11. Cyclones, hurricanes, and typhoons

Although scientists are inconclusive about the relation between climate change and incidences of cyclone/hurricane, there has been growing acceptance that climate change leads to an increase in the occurrence of cyclones. In the present climatic condition, more than 90% of damage is caused by 10% of the total storms, and the remaining 90% causes less than 10% damage (Mendelsohn et al., 2012). The excessive release of GHGs has caused an increment of sea surface temperatures resulting in greater hurricane frequency and hurricane intensity by increasing the wind speeds of the tropical storms (Gillett et al., 2008). The damage is enhanced by a higher population near the coasts and infrastructure established in the vicinity of coasts (Pielke, 2008). The larger the population and the higher the infrastructure to uproot, colossal is the damage caused by the hurricane. An increase in damage has been reported in the recent past (Watson, 2001; Pielke, 2008).Climate change has induced intensification of cyclones in the tropics in the past four decades (Webster et al., 2005; Emanuel et al., 2008). It has been estimated that global damage would increase $53 billion every year. Tropical nations have been stated to be at higher risk (Mendelsohn et al., 2012).

The frequency of tropical cyclones is likely to increase from 6% to 34% on a global scale and might go beyond 50% by the end of the 21st century. The intensity of wind speeds in the cyclones would increase by 2%–11% by the late 21st century, a direct result of global warming. Rainfall, as already stated, would strengthen and increase in frequency (Bender et al., 2010; Easterling et al., 2017; Knutson et al., 2019). Interestingly, the areas facing hurricane threat by tropical cyclones may shift away from the equatorial region, moving toward the poles (Kossin et al., 2017). This could be an outcome of expansion in a tropical area with a rise in global temperatures. NOAA suggests that an increase in 2°C in global temperature would strengthen wind speed of a tropical cyclone by nearly 10% and rainfall increment by 15% (Knutson et al., 2010, 2019).

A rise in sea level would increase the submergence of coasts and smaller islands (Mimura, 2007; Nicholls and Cazenave, 2010). The combination of sea level rise and an increase in cyclone occurrences would have devastating effects. There would be an increment in storm surges resulting from such a combination (Walsh et al., 2012; Knutson et al., 2019). Interestingly, the frequency and intensity of cyclones would increase, but their effects could be different in different areas. Some regions may face more damage, and some may face less (Bender et al., 2010; Lavender and Walsh, 2011).

Several initiatives were implemented in the state of Odisha in India to tackle cyclones. It included the creation of multipurpose shelters, cyclone response forces, expert integration, capacity building, technology incorporation, community involvement, nongovernmental organization participation, and mock drills. Additionally, the Indian meteorological department provides early accurate cyclone warnings. The Government of India facilitates robust communication among the various stakeholders, timely evacuation of people and livestock, and provisioning of essential services and coordinates resilience in the event of a cyclone. Furthermore, the National Disaster Response Force is brought into action to enhance the response to the cyclone. Media participates actively to act as an appropriate channel between the public, government, and nongovernment agencies (Mommen et al., 2014; Jha et al., 2016).

12. Loss of biodiversity and impact on flora and fauna

As already described in previous sections, climate change has produced devastating outcomes, inclusive of extremes of temperatures, glacier melting, polar ice disappearing, enhanced climatic variations, increased sea level, and boosted oceanic acidification (Parmesan et al., 2000; Pereira et al., 2010; Bellard et al., 2012; Seneviratne et al., 2012). The animals have to migrate and find suitable places to live and survive (Leatherman and Beller-Simms, 1997; Downing, 2002; Malcolm et al., 2006). Animals incapable of migration would have to adapt to the newly created environmental conditions such as warmer oceans. Additionally, fragmentation of habitat and its size reduction has come into the picture because of agriculture diversification and deforestation (Kappelle et al., 1999). Changes in the distribution of plant species, on a global level, are predicted with change in climatic conditions (Maley, 1996; Thuiller et al., 2008). Melting of ice has given rise to the growth of grass and moss in the Antarctica peninsula, which is unprecedented and could be threatening indications of global warming (Agrawal, 2011). Furthermore, the crustacean population has been decreasing over the years, with a significant reduction in their fecundity. This has affected the species distribution and food chains involving these crustaceans, thereby affecting the mammals on a large-scale thriving in these cold environments (Agrawal, 2011). Sea ice has a critical role in the survival of multiple fauna species since they provide breeding, nursing, and resting spaces. The tundra vegetation is reported to shift northward, thereby affecting the reindeer and caribou population (Arctic Climate Assessment, 2004).

Threats to biodiversity, leading to its losses, could be assigned to a number of factors. The rise in temperature is one such vital factor (Pacifici et al., 2017). It would affect the physiology of animals, thereby altering their homeostasis. Prolonged heat waves and forest fires would kill a number of animals and cause massive destruction of plants and trees (Bush, 1997; Maclean and Wilson, 2011; Pacifici et al., 2015). An increase in carbon dioxide levels would affect the C/N ratio in plants, which could significantly alter the insect population and the food chains associated with these insect populations. Some plants may consume more of the plants, thereby changing the flora distribution. Rising temperatures could affect the frequency and length of diapause stages in insects (Hickling et al., 2006; Agrawal, 2011). Climate change could modify the pest population and their range could expand, threatening our food security (Estay et al., 2009). Furthermore, climate change could affect the insect population across the globe, modifying the avian population and their distribution, which could be deleterious for nature (Agrawal, 2011). Warmer oceanic temperatures could alter the pisces, amphibian, and reptile population and their distribution. Interestingly, there could be alterations in the gender distribution, i.e., some species may experience higher male populations, and others may observe higher female numbers (Agrawal, 2011).

The process of ocean acidification would affect marine life (Fabry et al., 2008; Guinotte and Fabry, 2008). Planktons living in these oceans would get affected by a rise in acid levels in oceans (Joint et al., 2010). Dependence of marine food chains on planktons would cause large-scale damage to the marine ecosystem. An increase in carbon dioxide levels would reduce the oxygen levels in oceans creating a number of dead zones, i.e., oxygen-less zones, which cannot support life systems (Diaz and Rosenberg, 2008). Furthermore, the transitional zone of mangroves may get affected because of ocean acidification (Hansen et al., 2010; Beaumont et al., 2011). Interestingly, the stratification of oceans would be enhanced by ocean warming (Palacios, 2004). The upper layers would be warmed more than the tolerance of planktons. The inability of planktons to feed, in the absence of nutrients, would lead to a decline in their growth and abundance. The consequence of such a decline would be deleterious for marine food chains and the ecosystem as a whole (Dobson et al., 2006; Doney et al., 2009).

Another outcome of higher temperatures and ocean acidification would be coral bleaching (Hoegh-Guldberg, 1999; Hughes et al., 2003). Corals would expel the inhabiting algae, i.e., zooxanthellae, because of the decrease in carbonate content in oceans. The existence of a symbiotic relationship makes algae necessary for the survival of corals. The resulting “coral bleaching” would be devastating for the marine ecosystem, because of the dependence of a huge marine life on the corals (Guinotte and Fabry, 2008; Hofmann et al., 2010). These corals are rightly called “rainforests of the oceans.”

The increase in extreme events and disasters, such as fire, cyclone, drought or flood, caused because of human-induced climate change, would result in biodiversity loss (Hogg and Bernier, 2005; Keith et al., 2008; Kuiper et al., 2014; Wehner et al., 2017). The vegetation cover would get damaged, limiting its ability to support life system. Invasive or alien species might increase in number, adding to the stress on the existing life (Walther et al., 2009). Storm surges arising out of the rise in sea levels would be devastating for the coastal ecosystem, uprooting them exceptionally.

The rainfall pattern is bound to change in the scenario of climate change (Vittoz et al., 2013). Plants and animals, adapted to live in a particular weather pattern, might be affected (Bellard et al., 2012; El-Keblawy, 2014). An excess or lack of rainfall would bring about alterations in the life cycle of a number of plants and animals; an inability to adapt may result in their death (Maggini et al., 2011). Unsurprisingly, acidic rains would lead to additional deleterious effects (Schindler, 1988; Likens et al., 1996).

In situ and ex situ conservation methods have been incorporated in a number of countries across the planet. In situ methods include natural parks, wildlife sanctuaries, and biosphere reserves creation to conserve flora and fauna in their natural habitats. Ex situ methods include setting up of gene banks, seed banks, zoos, botanical gardens, and captive breeding of fauna (Al-Farabi, 2013). Several laws have been formulated by the government of India to reverse the biodiversity losses. These laws include Wildlife Protection Act, 1972, Environment Protection Act, 1986, Biological Diversity Act, 2002, and Forest Conservation Act, 1980 (Jayakumar, 1987; Mohanraj and Veenakumari, 1996; Sajwan and Kala, 2007).

13. Health effects

Climate change would be associated with adverse irreversible impact on the health of animals, including humans, and plants, and there could be a massive loss of life (Houghton et al., 1995). The increase in temperature causes excess heat, which would be unbearable for organisms, killing them on multiple occasions (Kalkstein, 1995). Dependence on cooling technology, for relief, could be counterproductive in the longer run. Additionally, such technologies produce gases polluting the atmosphere, affecting other parts of the ecosystem and causing deleterious effects to each individual (Burnett et al., 1994, 1997; Morris et al., 1995; Schwartz and Morris, 1995).

The increase in extreme, unpredictable weather events, such as floods, cyclones, droughts, and forest fires, would damage to life and property massively. Additionally, they bring about innumerous diseases in plants and animals (Patz et al., 1996; Epstein, 2001, 2002). Furthermore, there would be damage to ecosystem services, especially the loss of medicinal plants. Extreme weather events would damage the productivity of soil, resulting in inhibition of plant growth (Last et al., 1998). An increase in plant diseases would be associated with climate change. Pathogens affecting the plants could spread in their geographical extent with a warming of the climate and increase in humidity with greater precipitation (Crawford et al., 1991; Luo et al., 1995, 2003; Brasier, 1996; Carter et al., 1996).

Storm surges and inland intrusion of saline seawater would make the agricultural soil infertile, consequentially damaging the plants (Gornitz, 1991; Rahmstorf, 2017). It could be associated with contamination of groundwater, further aggravating the damage on the people living near to the coasts (Beckman, 1997). Changes in rainfall pattern, increasing the humidity levels, are also associated with an increase in disease outbreak by increasing the number and persistence of vectors and pathogens (Jofre et al., 2009). Changes in wind patterns would also affect the rollout of diseases (Chen et al., 2010).

Warmer temperatures would expand the habitat of several species of vectors, such as mosquitoes, causing a number of diseases such as malaria, dengue, and encephalitis (Epstein, 1997, 2002). Furthermore, a rise in temperature would cause an expansion in zones of disease transmission (Watson, 1998). An increase in El-Nino events has been linked to causing tropical diseases such as cholera, and climate change would result in further outbreaks of such diseases (Bouma and Dye, 1997). Climate change would increase the incidences of infectious diseases by affecting the pathogen, vector, host, or their living environment. Warming of climate has been reported to expand the range of such infectious disease (Patz et al., 1996; Epstein, 1999, 2001; Altizer et al., 2013; Bouzid et al., 2014). Diseases such as Hantavirus, Salmonellosis, and Giardiasis have started to come into the picture because of warmer climate and extreme weather events (Chretien et al., 2015).

14. Food security

The population explosion has resulted in an increase in food demand to very high levels, eventually creating food security issues. With persistent climate change, there would be an enhancement of the problem of food shortage (Hoogenboom, 2000; Lal, 2005; Howden et al., 2007). Floods and droughts would damage a lot of arable lands apart from the destruction of standing crops. Famine could arise from such developments (Challinor and Wheeler, 2008; Challinor et al., 2009; Gornall et al., 2010). Changes in the weather pattern have affected the production of crops throughout the globe. Additionally, pests may develop, which could destroy crops hugely, aggravating the problem of food scarcity (Aggarwal et al., 2006; Ziska et al., 2011). Irrigation would be affected due to alterations in rainfall patterns or differential melting of glaciers, ultimately affecting food security (Chang et al., 2002; Wilby, 2005; Wilby et al., 2006). Additionally, warmer temperatures might increase or decrease the crop production depending upon the optimal growth requirements for each crop. It has been reported that yield of rice increases, and maize production decreases at higher temperatures (Reddy and Pachepsky, 2000; Luo et al., 2003; Popova and Kercheva, 2005; Krishnan et al., 2007; Soler et al., 2007). Furthermore, climate change might affect soil properties such as soil water balance, creating food shortages (Fischer et al., 2007). Interestingly, the growth period of crops might decrease with changes in climatic conditions (Khan et al., 2009).

15. Climate refugees

Climate change would result in an unprecedented mass migration of people (Black, 1998; Hartmann, 2010). This could be an outcome of a rise in sea level, extreme hazard events such as flood or drought, disease outbreak, or global warming (Biermann and Boas, 2010; Farbotko and Lazrus, 2012). Islands and coastal areas getting submerged underwater or the emergence of uninhabitable places due to global warming would lead to humongous human displacement (Farbotko, 2010). This would create the problem of environmental refugees (Myers, 2002), leading to the development of newer problems of unhygienic human settlement issues such as disease outbreak. Political problems could increase (Hartmann, 2010). Violent conflicts might arise because of environmental stress (Homer-Dixon and Percival, 1996; Percival and Homer-Dixon, 1996).

16. Conclusion

It has been well established that climate change has worldwide repercussions. Climate change has led to a rise in global temperature; melting of glaciers and polar ice caps; sea level increment and changes in sea composition; weather pattern alterations; increased incidences of hazards and extreme events; disease outbreaks and emergence of new diseases; and biodiversity loss. For the planet to thrive, it becomes extremely necessary to look for adaptation and mitigation methods and technologies (IPCC, 2014b). Reduction in emission of GHGs, increased use of renewable energy, afforestation, adoption of sustainable practices, enhancement of carbon sequestration, water management, practicing 3R’s (reduce, reuse and recycle), and awareness generation and international cooperation could be few of the ways to prevent climate change and minimize the resulting damages. On an individual level, one needs to plant trees and stop cutting them down, decrease food wastage, consume less of meat and give preference to plant-based diet, reduce fossil fuel consumption and incorporate renewable energy sources, prefer walking and cycling to riding an automobile, and save water and electricity on an hourly basis(Raj and Singh, 2013; Amadeo, 2020). To survive, we must learn to adapt and adopt sustainable practices. If we do not, we are bound to perish.

#### Positive feedbacks make earth uninhabitable

Nathan Alexander Sears 21, PhD Candidate in Political Science at The University of Toronto, was a Professor of International Relations at the Universidad de Las Américas, Quito, “International Politics in the Age of Existential Threats,” Journal of Global Security Studies, vol. 6, no. 3, 03/01/2021, p. ogaa027

The second mode is human destruction of the natural environment, which could leave the planet uninhabitable for humanity (Ward 2008; Brannen 2017; Steffen et al. 2018; Spratt and Dunlop 2019; Wallace-Wells 2019; Ripple et al. 2020). Humans have become the driving force behind environmental change, which is why this geological epoch is increasingly called “the Anthropocene” (Crutzen 2002), to distinguish it from the unusually temperate period since the end of the last Ice Age roughly 11,700 years ago, the Holocene, when human civilization—probably not coincidentally—began and flourished (Steffen, Crutzen, and McNeill 2007).9 The decline of some of Earth’s environmental subsystems already exceeds the “planetary boundaries” believed to constitute a “safe operating space for humanity” (e.g., climate change, biodiversity loss, and the nitrogen cycle), while others are under serious strain (e.g., ocean acidification and the phosphorus cycle). The outcome of human-driven environmental decline could be “irreversible and, in some cases, abrupt environmental change, leading to a state less conducive to human development” (Rockstrom et al. 2009, 472). The species extinction crisis—what some are calling the “sixth mass extinction” (Kolbert 2014; Brannen 2017)—is a sign of Earth’s declining habitability in the Anthropocene.10

The biggest environmental danger may be climate change (or “global warming”). The major anthropogenic drivers of climate change are the burning of fossil fuels (e.g., coal, oil, and gas), combined with deforestation for agriculture (e.g., livestock and monocultures) and resource extraction (e.g., mining and oil), plus ocean warming undermining the planet’s capacity for absorbing carbon dioxide. Anthropogenic climate change could soon pass certain “tipping points,” whereby positive feedback loops in Earth’s climate system could lead to potentially irreversible and self-reinforcing “runaway” global warming (Kump, Kasting, and Crane 2003; Steffen et al. 2018). For example, the melting of Arctic “permafrost” could produce additional warming, as glacial retreat reduces the refractory effect of the ice and releases huge quantities of methane currently trapped beneath it. Earth could then move towards a “Hothouse Earth” climate, which would make the planet a less-hospitable place for humanity (Steffen et al. 2018; Spratt and Dunlop 2019; Wallace-Wells 2019; Ripple et al. 2020).

### Warming---AT: Defense---AT: Inevitable

#### It’s not too late

Dr. Eban Goodstein 19, Director of the Center for Environmental Policy and the MBA Program in Sustainability at Bard College, PhD in Economics from the University of Michigan, BA in Geology from Williams College, “Too Late to Stop Global Warming? A Response to Franzen”, June 2019, https://leadthechange.bard.edu/blog/too-late-to-stop-global-warming-a-response-to-franzen

So do we need to look Greta Thunberg and our other children in the eyes and say, sorry, but you need to be realistic? That a transition to a 100% clean energy economy is just not going to happen fast enough? That the global economy will soon collapse and billions of people will be homeless? Tell them, forget aggressive measures to cut emissions like the Green New Deal, focus instead on social adaptation?

No.

Climate despair is gaining dangerous traction among people who understand the profound moment in which we are living. But Franzen is wrong on the science, wrong on the impacts of two degree warming, and wrong on what it will take to stabilize the climate. And this is precisely the wrong historical moment to abandon belief in a finer future. Climate solutions are now cheaper then fossil fuels, and getting cheaper. People are embracing programs and initiatives around environmental education. It lies within our grasp to rewire the world with clean energy. Doing so in the next decade will deeply impact the lives not only of our children and grandchildren, but indeed, every human being and living creature who will walk the face of the planet, from now until the end of time.

Is it too Late to Stop Global Warming?

NASA scientist Jim Hansen introduced the “too late” language about climate change in 2005, arguing that “We have to stabilize emissions of carbon dioxide within a decade, or temperatures will warm by more than one degree [C].” We did not, and his prediction is now reality. Hansen also warned fifteen years ago, “we don’t have much time left”.

Last year, the IPCC set another guide-post. Holding temperatures to 1.5 degrees Celsius will require a clean energy transition to be far advanced by 2030. And to keep temperatures to 2 degrees Celsius we have until 2050 to largely decarbonize the global economy. When scientists say “too late” on climate change, what they mean simply is that we have foreclosed any likelihood of staying within a particular global warming temperature target.

If governments take no serious action at all in the coming few decades, then we are likely to wind up at between 3 and 5 degrees Celsius of heating. To put that last number in perspective, during the last Ice Age, when my hometown in New York state was covered by hundreds of meters of ice, the world was only 5 degrees Celsius colder than it is now. Unchecked we are on track for a warming that could easily hit Ice Age magnitude, only in the opposite direction, within the lifetime of my students.

So we do have a choice. Our action, or our inaction, will determine how much the world heats up. As detailed below, it is absolutely not too late, and will not be for decades. We have to fight and win a war now for clean energy, acting aggressively to hold global warming to the low end. A world that is 2 degrees hotter will be much, much better than one that is 3, 4 or 5. Every tenth of a degree will matter for our kids and grandkids.

No Runaway Greenhouse at 2 Degrees

So how can Franzen and others possibly say we should admit defeat? His main argument is that this possibility of holding future heating to a range, from 2 to 5 degrees, does not really exist. Instead, we are already headed across a tipping point:

“Our atmosphere and oceans can absorb only so much heat before climate change, intensified by various feedback loops, spins completely out of control. The consensus among scientists and policy-makers is that we’ll pass this point of no return if the global mean temperature rises by more than two degrees Celsius (maybe a little more, but also maybe a little less)… In the long run, it probably makes no difference how badly we overshoot two degrees; once the point of no return is passed, the world will become self-transforming.”

Here are the key lines: “The consensus among scientists and policy makers” is that above 2 degrees Celsius or a little more, the climate “spins completely out of control”. This is just wrong, and Franzen provides no evidence to back up this extraordinary claim. Yes, positive feedback loops like widespread, fire-driven deforestation or massive methane releases could collectively drive the planetary temperature upwards in an ever less controllable spiral. These are possibilities, risks we need to reduce. Indeed, the risks get higher the more global warming pollution we emit, yet another critical reason to aggressively reduce it now. But I know of no scientific source—let alone a “consensus”—maintaining that such a “self-transforming” runaway greenhouse scenario is inevitable or that it will be triggered at close to 2 degrees Celsius. Without this assertion, Franzen’s “too late” argument falls apart. Four degrees will be far worse then three, which will be far worse then two. So we have to fight like hell today for two or better.

#### Detailed scenario analysis proves---degrowth does solve fast enough

Dariusz Prokopowicz 18, Cardinal Stefan Wyszynski University in Warsaw, “What next with the global warming of the Earth's climate?” ResearchGate, 12/12/18, https://www.researchgate.net/post/What\_next\_with\_the\_global\_warming\_of\_the\_Earths\_climate

The report of the International Panel on Climate Change (IPCC) shows that greenhouse gas levels on the globe are the highest in 800,000 years. Further emission, which arises according to the authors of the report mainly due to the combustion of fossil fuels, will lead to climate changes, which will be the greater, the more intensive will be the release of gases into the atmosphere. The report is a synthesis of earlier findings of the IPCC.

The conducted prognostic analyzes show that if the industrial development proceeds in the same way as before, i.e. without the implementation of eco-innovations, without reducing greenhouse gas emissions, etc. there is a risk that by 2050 the average temperature on the Earth's surface may increase by another one degrees ° C. It would have been an increase in the average temperature on the surface of the Earth from the end of the first industrial revolution, from the beginning of the 20th century by two degrees ° C. Then the pace of climate change will increase so much that the global warming process can escape any control and then the person will not be able to stop or significantly slow down this process. In such a dark scenario, the average temperature on the surface of the Earth until the end of the twenty-first century may increase by as much as four degrees ° C. Then it will be several times the increase of any negative external effects of climate change on the current state. Slak of emerging climatic cataclysms, including tornadoes, droughts, volcanic eruptions, melting of glaciers in chains of mountain peaks and in the arctic circle region at the Arctic will significantly accelerate. The melting of eternal decay in the Arctic region will release further millions of tons of methane and the greenhouse effect will accelerate even further and in the XXII century an increase in the average temperature on the Earth's surface can achieve a geometric pace. Then it will be a disaster not only for human civilization but also for a large part of life forms on Earth. Pradoxically, man as a rational, intelligent being who, evolutionarily gained an advantage over all other forms of life on Earth and subordinated the whole planet to itself, may lead to self-destruction. Or maybe it is not too late to implement a new eco-friendly economy to at least try to stop greenhouse gas emissions and reverse unfavorable global warming processes? It is therefore necessary to promote and implement the principles of sustainable development within the framework of the new green economy.

Please reply. I invite you to the discussion

Chart. Global Warming. CO2 emissions of greenhouse gases, a forecast of the increase in the average temperature on Earth. Source: NOAA, NASA.

Chart, line chart

Description automatically generated

#### Even if it’s inevitable---the degree matters because of threshold uncertainty---that’s Marques---AND…

David Wallace-Wells 19, National Fellow at New America, deputy editor of New York Magazine, “I. Cascades,” The Uninhabitable Earth: Life After Warming, 02/19/2019, Crown/Archetype

In reading about warming, you will often come across analogies from the planetary record: the last time the planet was this much warmer, the logic runs, sea levels were here. These conditions are not coincidences. The sea level was there largely because the planet was that much warmer, and the geologic record is the best model we have for understanding the very complicated climate system and gauging just how much damage will come from turning up the temperature by two or four or six degrees. Which is why it is especially concerning that recent research into the deep history of the planet suggests that our current climate models may be underestimating the amount of warming we are due for in 2100 by as much as half. In other words, temperatures could rise, ultimately, by as much as double what the IPCC predicts. Hit our Paris emissions targets and we may still get four degrees of warming, meaning a green Sahara and the planet’s tropical forests transformed into fire-dominated savanna. The authors of one recent paper suggested the warming could be more dramatic still—slashing our emissions could still bring us to four or five degrees Celsius, a scenario they said would pose severe risks to the habitability of the entire planet. “Hothouse Earth,” they called it.

Because these numbers are so small, we tend to trivialize the differences between them—one, two, four, five. Human experience and memory offer no good analogy for how we should think of those thresholds, but, as with world wars or recurrences of cancer, you don’t want to see even one. At two degrees, the ice sheets will begin their collapse, 400 million more people will suffer from water scarcity, major cities in the equatorial band of the planet will become unlivable, and even in the northern latitudes heat waves will kill thousands each summer. There would be thirty-two times as many extreme heat waves in India, and each would last five times as long, exposing ninety-three times more people. This is our best-case scenario. At three degrees, southern Europe would be in permanent drought, and the average drought in Central America would last nineteen months longer and in the Caribbean twentyone months longer. In northern Africa, the figure is sixty months longer— five years. The areas burned each year by wildfires would double in the Mediterranean and sextuple, or more, in the United States. At four degrees, there would be eight million more cases of dengue fever each year in Latin America alone and close to annual global food crises. There could be 9 percent more heat-related deaths. Damages from river flooding would grow thirtyfold in Bangladesh, twentyfold in India, and as much as sixtyfold in the United Kingdom. In certain places, six climatedriven natural disasters could strike simultaneously, and, globally, damages could pass $600 trillion—more than twice the wealth as exists in the world today. Conflict and warfare could double.

Even if we pull the planet up short of two degrees by 2100, we will be left with an atmosphere that contains 500 parts per million of carbon— perhaps more. The last time that was the case, sixteen million years ago, the planet was not two degrees warmer; it was somewhere between five and eight, giving the planet about 130 feet of sea-level rise, enough to draw a new American coastline as far west as I-95. Some of these processes take thousands of years to unfold, but they are also irreversible, and therefore effectively permanent. You might hope to simply reverse climate change; you can’t. It will outrun all of us.

This is part of what makes climate change what the theorist Timothy Morton calls a “hyperobject”—a conceptual fact so large and complex that, like the internet, it can never be properly comprehended. There are many features of climate change—its size, its scope, its brutality—that, alone, satisfy this definition; together they might elevate it into a higher and more incomprehensible conceptual category yet. But time is perhaps the most mind-bending feature, the worst outcomes arriving so long from now that we reflexively discount their reality.

Yet those outcomes promise to mock us and our own sense of the real in return. The ecological dramas we have unleashed through our land use and by burning fossil fuels—slowly for about a century and very rapidly for only a few decades—will play out over many millennia, in fact over a longer span of time than humans have even been around, performed in part by creatures and in environments we do not yet even know, ushered onto the world stage by the force of warming. And so, in a convenient cognitive bargain, we have chosen to consider climate change only as it will present itself this century. By 2100, the United Nations says, we are due for about 4.5 degrees of warming, following the path we are on today. That is, farther from the Paris track than the Paris track is from the twodegree threshold of catastrophe, which it more than doubles.

As Naomi Oreskes has noted, there are far too many uncertainties in our models to take their predictions as gospel. Just running those models many times, as Gernot Wagner and Martin Weitzman do in their book Climate Shock, yields an 11 percent chance we overshoot six degrees. Recent work by the Nobel laureate William Nordhaus suggests that better-than-anticipated economic growth means better than one-in-three odds that our emissions will exceed the U.N.’s worst-case “business as usual” scenario. In other words, a temperature rise of five degrees or possibly more.

The upper end of the probability curve put forward by the U.N. to estimate the end-of-the-century, business-as-usual scenario—the worstcase outcome of a worst-case emissions path—puts us at eight degrees. At that temperature, humans at the equator and in the tropics would not be able to move around outside without dying.

In that world, eight degrees warmer, direct heat effects would be the least of it: the oceans would eventually swell two hundred feet higher, flooding what are now two-thirds of the world’s major cities; hardly any land on the planet would be capable of efficiently producing any of the food we now eat; forests would be roiled by rolling storms of fire, and coasts would be punished by more and more intense hurricanes; the suffocating hood of tropical disease would reach northward to enclose parts of what we now call the Arctic; probably about a third of the planet would be made unlivable by direct heat; and what are today literally unprecedented and intolerable droughts and heat waves would be the quotidian condition of whatever human life was able to endure.

We will, almost certainly, avoid eight degrees of warming; in fact, several recent papers have suggested the climate is actually less sensitive to emissions than we’d thought, and that even the upper bound of a business-as-usual path would bring us to about five degrees, with a likely destination around four. But five degrees is nearly as unthinkable as eight, and four degrees not much better: the world in a permanent food deficit, the Alps as arid as the Atlas Mountains.

Between that scenario and the world we live in now lies only the open question of human response. Some amount of further warming is already baked in, thanks to the protracted processes by which the planet adapts to greenhouse gas. But all of those paths projected from the present—to two degrees, to three, to four, five, or even eight—will be carved overwhelmingly by what we choose to do now. There is nothing stopping us from four degrees other than our own will to change course, which we have yet to display. Because the planet is as big as it is, and as ecologically diverse; because humans have proven themselves an adaptable species, and will likely continue to adapt to outmaneuver a lethal threat; and because the devastating effects of warming will soon become too extreme to ignore, or deny, if they haven’t already; because of all that, it is unlikely that climate change will render the planet truly uninhabitable. But if we do nothing about carbon emissions, if the next thirty years of industrial activity trace the same arc upward as the last thirty years have, whole regions will become unlivable by any standard we have today as soon as the end of this century.

A few years ago, E. O. Wilson proposed a term, “Half-Earth,” to help us think through how we might adapt to the pressures of a changing climate, letting nature run its rehabilitative course on half the planet and sequestering humanity in the remaining, habitable half of the world. The fraction may be smaller than that, possibly considerably, and not by choice; the subtitle of his book was Our Planet’s Fight for Life. On longer timescales, the even-bleaker outcome is possible, too—the livable planet darkening as it approaches a human dusk.

It would take a spectacular coincidence of bad choices and bad luck to make that kind of zero earth possible within our lifetime. But the fact that we have brought that nightmare eventuality into play at all is perhaps the overwhelming cultural and historical fact of the modern era—what historians of the future will likely study about us, and what we’d have hoped the generations before ours would have had the foresight to focus on, too. Whatever we do to stop warming, and however aggressively we act to protect ourselves from its ravages, we will have pulled the devastation of human life on Earth into view—close enough that we can see clearly what it would look like and know, with some degree of precision, how it will punish our children and grandchildren. Close enough, in fact, that we are already beginning to feel its effects ourselves, when we do not turn away.

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It is almost hard to believe just how much has happened and how quickly. In the late summer of 2017, three major hurricanes arose in the Atlantic at once, proceeding at first along the same route as though they were battalions of an army on the march. Hurricane Harvey, when it struck Houston, delivered such epic rainfall it was described in some areas as a “500,000-year event”—meaning that we should expect that amount of rain to hit that area once every five hundred millennia.

Sophisticated consumers of environmental news have already learned how meaningless climate change has rendered such terms, which were meant to describe storms that had a 1-in-500,000 chance of striking in any given year. But the figures do help in this way: to remind us just how far global warming has already taken us from any natural-disaster benchmark our grandparents would have recognized. To dwell on the more common 500-year figure just for a moment, it would mean a storm that struck once during the entire history of the Roman Empire. Five hundred years ago, there were no English settlements across the Atlantic, so we are talking about a storm that should hit just once as Europeans arrived and established colonies, as colonists fought a revolution and Americans a civil war and two world wars, as their descendants established an empire of cotton on the backs of slaves, freed them, and then brutalized their descendants, industrialized and postindustrialized, triumphed in the Cold War, ushered in the “end of history,” and witnessed, just a decade later, its dramatic return. One storm in all that time, is what the meteorological record has taught us to expect. Just one. Harvey was the third such flood to hit Houston since 2015. And the storm struck, in places, with an intensity that was supposed to be a thousand times rarer still.

That same season, an Atlantic hurricane hit Ireland, 45 million were flooded from their homes in South Asia, and unprecedented wildfires tilled much of California into ash. And then there was the new category of quotidian nightmare, climate change inventing the once-unimaginable category of obscure natural disasters—crises so large they would once have been inscribed in folklore for centuries today passing across our horizons ignored, overlooked, or forgotten. In 2016, a “thousand-year flood” drowned small-town Ellicott City, Maryland, to take but one example almost at random; it was followed, two years later, in the same small town, by another. One week that summer of 2018, dozens of places all over the world were hit with record heat waves, from Denver to Burlington to Ottawa; from Glasgow to Shannon to Belfast; from Tbilisi, in Georgia, and Yerevan, in Armenia, to whole swaths of southern Russia. The previous month, the daytime temperature of one city in Oman reached above 121 degrees Fahrenheit, and did not drop below 108 all night, and in Quebec, Canada, fifty-four died from the heat. That same week, one hundred major wildfires burned in the American West, including one in California that grew 4,000 acres in one day, and another, in Colorado, that produced a volcano-like 300-foot eruption of flames, swallowing an entire subdivision and inventing a new term, “fire tsunami,” along the way. On the other side of the planet, biblical rains flooded Japan, where 1.2 million were evacuated from their homes. Later that summer, Typhoon Mangkhut forced the evacuation of 2.45 million from mainland China, the same week that Hurricane Florence struck the Carolinas, turning the port city of Wilmington briefly into an island and flooding large parts of the state with hog manure and coal ash. Along the way, the winds of Florence produced dozens of tornadoes across the region. The previous month, in India, the state of Kerala was hit with its worst floods in almost a hundred years. That October, a hurricane in the Pacific wiped Hawaii’s East Island entirely off the map. And in November, which has traditionally marked the beginning of the rainy season in California, the state was hit instead with the deadliest fire in its history—the Camp Fire, which scorched several hundred square miles outside of Chico, killing dozens and leaving many more missing in a place called, proverbially, Paradise. The devastation was so complete, you could almost forget the Woolsey Fire, closer to Los Angeles, which burned at the same time and forced the sudden evacuation of 170,000.

It is tempting to look at these strings of disasters and think, Climate change is here. And one response to seeing things long predicted actually come to pass is to feel that we have settled into a new era, with everything transformed. In fact, that is how California governor Jerry Brown described the state of things in the midst of the state’s wildfire disaster: “a new normal.”

The truth is actually much scarier. That is, the end of normal; never normal again. We have already exited the state of environmental conditions that allowed the human animal to evolve in the first place, in an unsure and unplanned bet on just what that animal can endure. The climate system that raised us, and raised everything we now know as human culture and civilization, is now, like a parent, dead. And the climate system we have been observing for the last several years, the one that has battered the planet again and again, is not our bleak future in preview. It would be more precise to say that it is a product of our recent climate past, already passing behind us into a dustbin of environmental nostalgia. There is no longer any such thing as a “natural disaster,” but not only will things get worse; technically speaking, they have already gotten worse. Even if, miraculously, humans immediately ceased emitting carbon, we’d still be due for some additional warming from just the stuff we’ve put into the air already. And of course, with global emissions still increasing, we’re very far from zeroing out on carbon, and therefore very far from stalling climate change. The devastation we are now seeing all around us is a beyond-best-case scenario for the future of warming and all the climate disasters it will bring.

What that means is that we have not, at all, arrived at a new equilibrium. It is more like we’ve taken one step out on the plank off a pirate ship. Perhaps because of the exhausting false debate about whether climate change is “real,” too many of us have developed a misleading impression that its effects are binary. But global warming is not “yes” or “no,” nor is it “today’s weather forever” or “doomsday tomorrow.” It is a function that gets worse over time as long as we continue to produce greenhouse gas. And so the experience of life in a climate transformed by human activity is not just a matter of stepping from one stable ecosystem into another, somewhat worse one, no matter how degraded or destructive the transformed climate is. The effects will grow and build as the planet continues to warm: from 1 degree to 1.5 to almost certainly 2 degrees and beyond. The last few years of climate disasters may look like about as much as the planet can take. In fact, we are only just entering our brave new world, one that collapses below us as soon as we set foot on it.

Many of these new disasters arrived accompanied by debate about their cause—about how much of what they have done to us comes from what we have done to the planet. For those hoping to better understand precisely how a monstrous hurricane arises out of a placid ocean, these inquiries are worthwhile, but for all practical purposes the debate yields no real meaning or insight. A particular hurricane may owe 40 percent of its force to anthropogenic global warming, the evolving models might suggest, and a particular drought may be half again as bad as it might have been in the seventeenth century. But climate change is not a discrete clue we can find at the scene of a local crime—one hurricane, one heat wave, one famine, one war. Global warming isn’t a perpetrator; it’s a conspiracy. We all live within climate and within all the changes we have produced in it, which enclose us all and everything we do. If hurricanes of a certain force are now five times as likely as in the pre-Columbian Caribbean, it is parsimonious to the point of triviality to argue over whether this one or that one was “climate-caused.” All hurricanes now unfold in the weather systems we have wrecked on their behalf, which is why there are more of them, and why they are stronger. The same is true for wildfires: this one or that one may be “caused” by a cookout or a downed power line, but each is burning faster, bigger, and longer because of global warming, which gives no reprieve to fire season. Climate change isn’t something happening here or there but everywhere, and all at once. And unless we choose to halt it, it will never stop.

### Warming---AT: Defense---AT: Inevitable---Wrong

#### It’s not too late

Dr. Mike Hulme 20, Professor of Human Geography in the Department of Geography at the University of Cambridge and Fellow of Pembroke College, PhD in Applied Climatology from the University of Wales, “Is It Too Late (To Stop Dangerous Climate Change)? An Editorial”, WIREs, Volume11, Issue1, January / February 2020, https://doi.org/10.1002/wcc.619

There is a long history of climate deadlines being set publicly by commentators, politicians and campaigners…and then of those deadlines passing with the threat unrealized. For example, back in October 2006, the UK Prime Minister Tony Blair declared that “…we have a window of only 10‐15 years to take the steps we need to avoid crossing catastrophic tipping points.” And Andrew Simms of the New Economics Foundation think‐tank set his climate clock ticking on August 1, 2008, claiming that there were only 100 months left to prevent global climatic disaster. In his own words, Simms shouted “fire” in claiming that by December 1, 2016 “we could reach a tipping point for the beginnings of runaway climate change,”6 pre‐empting Thunberg's “house on fire” by more than a decade. This metaphor of the countdown clock has been reinvigorated over the past 2 or 3 years with new on‐line climate clocks being established at the Mercator Institute in Berlin7 and at the Human Impact Lab in Montreal,8 counting down by the second to “the end” (Asayama, Bellamy, Geden, Pearce, & Hulme, 2019).

There is an equally long history of portraying the climatic future in fearful and apocalyptic terms (Boia, 2005; Buell, 2003; Killingsworth & Palmer, 1996). This trope did not start with Wallace‐Wells' recent book, “The Uninhabitable Earth: a Story of the Future” (Wallace‐Wells, 2019)—although he certainly aligned himself with the new climate zeitgeist expressed by Ocasio‐Cortez and Thunberg. In the years following 9/11 climate change was frequently compared with the threats of weapons of mass destruction and global terrorism and claimed to be much greater (Hulme, 2008), while Risbey (2008) more than a decade ago suggested that the language of urgency, crisis, and catastrophe was indeed appropriate to use for climate change. But what seems different now is the seeming precision of the new deadline being announced and the wider fears and anxieties about the future which this language has unleashed. As with a student paralyzed by writer's block as the deadline for submitting her dissertation approaches, panic may set in.

The implications of this new climate of deadline‐ism are important to reflect on (Asayama et al., 2019). First, the rhetoric of deadlines and “it's too late” does not do justice to what we know scientifically about climate change. Climate prediction science is based on probabilistic forecasts which underpin the quantification of risk. There is a range of possible values for future global warming. It is as false scientifically to say that the climate future will be catastrophic as it is to say with certainty that it will be merely lukewarm. Neither is there a cliff edge to fall over in 2030 or at 1.5°C of warming, as indeed the IPCC's 2018 Report makes clear. There may be many reasons to set a policy deadline, but scientific knowledge alone is not one of them.

#### Warming isn’t inevitable---it can still be reversed

Lindsey Walter 18, Policy Advisor in the Clean Energy Program at Third Way, M.P.A. in Environmental Science and Policy at Columbia’s School of International and Public Affairs, Fulbright Scholar, “3 Reasons For Hope in the IPCC’s New Climate Report”, 10-9, https://www.thirdway.org/op-ed/3-reasons-for-hope-in-the-ipccs-new-climate-report

#1 We’re Not Too Late…Yet

The report states that “past emissions alone are unlikely to raise [global mean surface temperature] to 1.5°C above pre-industrial levels.” This means it is not inevitable that we will hit 1.5°C warming due to our past emissions.

There is still an opportunity, albeit a short one, to change our priorities and policies, commit to drastically reducing our emissions, and prevent a level of global warming that will cause irreversible and devastating impacts on people and the planet.

But don’t mistake this bit of good news as a justification to take a breather or confirmation that we are doing well enough already. The report also explains, “If emissions continue at their present rate, human-induced warming will exceed 1.5°C by around 2040.” We are definitely not on track, but the evidence shows we still have time to remedy that.

#2 We Can Fight Climate Change By Becoming More Resilient

To halt global warming, we ultimately need to reduce the amount of carbon dioxide in the atmosphere. But we can also fight back by making ourselves more resilient to the impacts of climate change, thereby reducing the toll it takes on people and the global economy. More than previous IPCC reports, this one makes it clear that resiliency solutions are climate change solutions, adding even more tools to our toolbox to help us fix this problem.

Poor and disadvantaged communities are the most impacted by climate change, bearing the brunt of the consequences for our global actions. By steering a relatively small percentage of our overall climate efforts toward lifting these people out of poverty and providing more economic and social opportunity, we can drastically lessen the damage from climate change.

Becoming more resilient is a proactive approach to protecting communities while tackling emissions reductions simultaneously--basically allowing us to attack climate change on two flanks.

#3 We are Capable of Making Rapid Transitions

The report explains that we need to make sweeping, global changes at a rate that has “no documented historic precedent” in order to stay below 1.5°C. But it also reminds us that we have made transitions this rapid “within specific sectors, technologies, and spatial contexts.” These examples of smaller, successful transitions offer reason for hope--that we could replicate and build upon them, again and again, across the globe, in order to see large-scale change. So it’s not a matter of “can we?”, but “will we?”.

Already, we’ve seen significant innovation in technologies to produce zero-carbon energy and even remove carbon dioxide from the atmosphere; both of which are highlighted as critical components of 1.5°C strategy. In fact, rapid transitions with wind, solar, and electricity storage suggest a larger “system transition in electricity generation may be underway.” Advancements in other low- and zero-carbon energy sources, including nuclear, geothermal, and carbon capture, could provide further crucial emissions reductions for the energy sector.

A rapid transition to a low-carbon world is challenging, but we can achieve it if we commit to doing so.

### Warming---AT: Defense---AT: Negative Feedbacks

#### Feedbacks are overwhelmingly positive

David Wallace-Wells 19, National Fellow at New America, deputy editor of New York Magazine, “I. Cascades,” The Uninhabitable Earth: Life After Warming, 02/19/2019, Crown/Archetype

The assaults will not be discrete—this is another climate delusion. Instead, they will produce a new kind of cascading violence, waterfalls and avalanches of devastation, the planet pummeled again and again, with increasing intensity and in ways that build on each other and undermine our ability to respond, uprooting much of the landscape we have taken for granted, for centuries, as the stable foundation on which we walk, build homes and highways, shepherd our children through schools and into adulthood under the promise of safety—and subverting the promise that the world we have engineered and built for ourselves, out of nature, will also protect us against it, rather than conspiring with disaster against its makers.

Consider those California wildfires. In March 2018, Santa Barbara County issued mandatory evacuation orders for those living in Montecito, Goleta, Santa Barbara, Summerland, and Carpinteria—where the previous December’s fires had hit hardest. It was the fourth evacuation order precipitated by a climate event in the county in just three months, but only the first had been for fire. The others were for mudslides ushered into possibility by that fire, one of the toniest communities in the most glamorous state of the world’s preeminently powerful country upended by fear that their toy vineyards and hobby stables, their world-class beaches and lavishly funded public schools, would be inundated by rivers of mud, the community as thoroughly ravaged as the sprawling camps of temporary shacks housing Rohingya refugees from Myanmar in the monsoon region of Bangladesh. It was. More than a dozen died, including a toddler swept away by mud and carried miles down the mountainslope to the sea; schools closed and highways flooded, foreclosing the routes of emergency vehicles and making the community an inland island, as if behind a blockade, choked off by a mud noose.

Some climate cascades will unfold at the global level—cascades so large their effects will seem, by the curious legerdemain of environmental change, imperceptible. A warming planet leads to melting Arctic ice, which means less sunlight reflected back to the sun and more absorbed by a planet warming faster still, which means an ocean less able to absorb atmospheric carbon and so a planet warming faster still. A warming planet will also melt Arctic permafrost, which contains 1.8 trillion tons of carbon, more than twice as much as is currently suspended in the earth’s atmosphere, and some of which, when it thaws and is released, may evaporate as methane, which is thirty-four times as powerful a greenhouse-gas warming blanket as carbon dioxide when judged on the timescale of a century; when judged on the timescale of two decades, it is eighty-six times as powerful. A hotter planet is, on net, bad for plant life, which means what is called “forest dieback”—the decline and retreat of jungle basins as big as countries and woods that sprawl for so many miles they used to contain whole folklores—which means a dramatic strippingback of the planet’s natural ability to absorb carbon and turn it into oxygen, which means still hotter temperatures, which means more dieback, and so on. Higher temperatures means more forest fires means fewer trees means less carbon absorption, means more carbon in the atmosphere, means a hotter planet still—and so on. A warmer planet means more water vapor in the atmosphere, and, water vapor being a greenhouse gas, this brings higher temperatures still—and so on. Warmer oceans can absorb less heat, which means more stays in the air, and contain less oxygen, which is doom for phytoplankton—which does for the ocean what plants do on land, eating carbon and producing oxygen— which leaves us with more carbon, which heats the planet further. And so on. These are the systems climate scientists call “feedbacks”; there are more. Some work in the other direction, moderating climate change. But many more point toward an acceleration of warming, should we trigger them. And just how these complicated, countervailing systems will interact—what effects will be exaggerated and what undermined by feedbacks—is unknown, which pulls a dark cloud of uncertainty over any effort to plan ahead for the climate future. We know what a best-case outcome for climate change looks like, however unrealistic, because it quite closely resembles the world as we live on it today. But we have not yet begun to contemplate those cascades that may bring us to the infernal range of the bell curve.

### Warming---AT: Defense---AT: Tail-End Improbable

#### Worst case scenarios are the most likely

Samuel Miller-McDonald 18, Master of Environmental Management at Yale University studying energy politics and grassroots innovations in the US, "Extinction vs. Collapse," Resilience, 5/2/2018, https://www.resilience.org/stories/2018-05-02/extinction-vs-collapse/

Climate twitter – the most fun twitter – has recently been reigniting the debate between human extinction and mere civilizational collapse, between doom and gloom, despair and (kind of) hope. It was sparked by an interview in The Guardian with acclaimed scientist Mayer Hillman. He argues that we’re probably doomed, and confronting the likelihood that we’re rushing toward collective death may be necessary to save us.

The headline alone provoked a lot of reactions, many angered by the ostensible defeatism embedded in Hillman’s comments. His stated view represents one defined camp that is mostly convinced of looming human extinction. It stands in contrast to another group that believes human extinction is highly unlikely, maybe impossible, and certainly will not occur due to climate change in our lifetimes. Collapse maybe, but not extinction.

Who’s more right? Let’s take a closer look.

First, the question of human extinction is totally bounded by uncertainty. There’s uncertainty in climate data, uncertainty in models and projections, and even more uncertainty in the behavior of human systems. We don’t know how we’ll respond to the myriad impacts climate change is beginning to spark, and we don’t know how sensitive industrial civilization will be to those impacts.

We don’t really know if humans are like other apex predators highly sensitive to ecological collapse, or are among the most adaptable mammals to ever walk the earth. One may be inclined to lean toward the latter given that humans have colonized every ecological niche on the planet except Antarctica. That bands of people can survive in and around deserts as well as the Arctic as well as equatorial rainforests speaks to the resilience of small social groups. It’s why The Road is so disturbingly plausible; there could be a scenario in which basically everything is dead but people, lingering in the last grey waste of the world. On the other hand, we’ve never lived outside of the very favorable conditions of the Holocene, and past civilizational and population collapses suggest humans are in fact quite sensitive to climatic shifts.

Famed climate scientist James Hansen has discussed the possibility of “Venus syndrome,” for instance, which sits at the far end of worst case scenarios. While a frightening thought experiment, it is easily dismissed as it’s based on so many uncertainties and doesn’t carry the weight of anything near consensus.

What’s more frightening than potentially implausible uncertainties are the currently existing certainties.

For example:

Ecology

+ The atmosphere has proven more sensitive to GHG emissions than predicted by mainstream science, and we have a high chance of hitting 2oC of warming this century. Could hit 1.5C in the 2020s. Worst-case warming scenarios are probably the most likely.

+ Massive marine death is happening far faster than anyone predicted and we could be on the edge of an anoxic event.

+ Ice melt is happening far faster than mainstream predictions. Greenland’s ice sheet is threatening to collapse and already slowing ocean currents, which too could collapse.

+ Which also means predictions of sea level rise have doubled for this century.

+ Industrial agriculture is driving massive habitat loss and extinction. The insect collapse – population declines of 75% to 80% have been seen in some areas – is something no one predicted would happen so fast, and portends an ecological sensitivity beyond our fears. This is causing an unexpected and unprecedented bird collapse (1/8 of bird species are threatened) in Europe.

+ Forests, vital carbon sinks, are proving sensitive to climate impacts.

+ We’re living in the 6th mass extinction event, losing potentially dozens of species per day. We don’t know how this will impact us and our ability to feed ourselves.

Energy

+ Energy transition is essential to mitigating 1.5+C warming. Energy is the single greatest contributor to anthro-GHG. And, by some estimates, transition is happening 400 years too slowly to avoid catastrophic warming.

+ Incumbent energy industries (that is, oil & gas) dominate governments all over the world. We live in an oil oligarchy – a petrostate, but for the globe. Every facet of the global economy is dependent on fossil fuels, and every sector – from construction to supply chains to transport to electricity to extraction to agriculture and on and on – is built around FF consumption. There’s good reason to believe FF will remain subsidized by governments beholden to their interests even if they become less economically viable than renewables, and so will maintain their dominance.

+ We are living in history’s largest oil & gas boom.

+ Kilocalorie to kilocalorie, FF is extremely dense and extremely cheap. Despite reports about solar getting cheaper than FF in some places, non-hydro/-carbon renewables are still a tiny minority (~2%) of global energy consumption and will simply always, by their nature, be less dense kcal to kcal than FF, and so will always be calorically more expensive.

+ Energy demand probably has to decrease globally to avoid 1.5C, and it’s projected to dramatically increase. Getting people to consume less is practically impossible, and efficiency measures have almost always resulted in increased consumption.

+ We’re still setting FF emissions records.

Politics

+ Conditions today resemble those prior to the 20th century’s world wars: extreme wealth inequality, rampant economic insecurity, growing fascist parties/sentiment, and precarious geopolitical relations, and the Thucydides trap suggests war between Western hegemons and a rising China could be likely. These two factors could disrupt any kind of global cooperation on decarbonization and, to the contrary, will probably mean increased emissions (the US military is one of the world’s single largest consumers/emitters of FF).

+ Neoliberal ideology is so thoroughly embedded in our academic, political, and cultural institutions, and so endemic to discourse today, that the idea of degrowth – probably necessary to avoid collapse – and solidarity economics isn’t even close to discussion, much less realization, and, for self-evident reasons, probably never will be.

+ Living in a neoliberal culture also means we’ve all been trained not to sacrifice for the common good. But solving climate change, like paying more to achieve energy transition or voluntarily consuming less, will all entail sacrificing for the greater good. Humans sometimes are great at that; but the market fundamentalist ideology that pervades all social, commercial, and even self relations today stands against acting for the common good or in collective action.

+ There’s basically no government in the world today taking climate change seriously. There are many governments posturing and pretending to take it seriously, but none have substantially committed to a full decarbonization of their economies. (Iceland may be an exception, but Iceland is about 24 times smaller than NYC, so…)

+ Twenty-five years of governments knowing about climate change has resulted in essentially nothing being done about it, no emissions reductions, no substantive moves to decarbonize the economy. Politics have proven too strong for common sense, and there’s no good reason to suspect this will change anytime soon.

+ Wealth inequality is embedded in our economy so thoroughly – and so indigenously to FF economies – that it will probably continue either causing perpetual strife, as it has so far, or eventually cement a permanent underclass ruled by a small elite, similar to agrarian serfdom. There is a prominent view in left politics that greater wealth equality, some kind of ecosocialism, is a necessary ingredient in averting the kind of ecological collapse the economy is currently driving, given that global FF capitalism by its nature consumes beyond carrying capacities. At least according to one Nasa-funded study, the combination of inequality and ecological collapse is a likely cause for civilizational collapse.

Even with this perfect storm of issues, it’s impossible to know how likely extinction is, and it’s impossible to judge how likely or extensive civilizational collapse may be. We just can’t predict how human beings and human systems will respond to the shocks that are already underway. We can make some good guesses based on history, but they’re no more than guesses. Maybe there’s a miracle energy source lurking in a hangar somewhere waiting to accelerate non-carbon transition. Maybe there’s a swelling political movement brewing under the surface that will soon build a more just, ecologically sane order into the world. Community energy programs are one reason to retain a shred of optimism; but also they’re still a tiny fraction of energy production and they are not growing fast, but they could accelerate any moment. We just don’t know how fast energy transition can happen, and we just don’t know how fast the world could descend into climate-driven chaos – either by human strife or physical storms.

What we do know is that, given everything above, we are living through a confluence of events that will shake the foundations of civilization, and jeopardize our capacity to sustain large populations of humans. There is enough certainty around these issues to justify being existentially alarmed. At this point, whether we go extinct or all but a thousand of us go extinct (again), maybe that shouldn’t make much difference. Maybe the destruction of a few billion or 5 billion people is morally equivalent to the destruction of all 7 billion of us, and so should provoke equal degrees of urgency. Maybe this debate about whether we’ll go completely extinct rather than just mostly extinct is absurd. Or maybe not. I don’t know. What I do know is that, regardless of the answer, there’s no excuse to stop fighting for a world that sustains life.

### Warming---Epistemology

#### Err NEG on every level of the turn---you are cognitively predisposed to neglect warming impacts, exaggerate decline impacts, AND underestimate alternatives.

David Wallace-Wells 19. National Fellow at New America, deputy editor of New York Magazine. 02/19/2019. “III. The Climate Kaleidoscope.” The Uninhabitable Earth: Life After Warming, Crown/Archetype.

The scroll of cognitive biases identified by behavioral psychologists and fellow travelers over the last half century is, like a social media feed, apparently infinite, and every single one distorts and distends our perception of a changing climate—a threat as imminent and immediate as the approach of a predator, but viewed always through a bell jar. There is, to start with, anchoring, which explains how we build mental models around as few as one or two initial examples, no matter how unrepresentative—in the case of global warming, the world we know today, which is reassuringly temperate. There is also the ambiguity effect, which suggests that most people are so uncomfortable contemplating uncertainty, they will accept lesser outcomes in a bargain to avoid dealing with it. In theory, with climate, uncertainty should be an argument for action—much of the ambiguity arises from the range of possible human inputs, a quite concrete prompt we choose to process instead as a riddle, which discourages us. There is anthropocentric thinking, by which we build our view of the universe outward from our own experience, a reflexive tendency that some especially ruthless environmentalists have derided as “human supremacy” and that surely shapes our ability to apprehend genuinely existential threats to the species—a shortcoming many climate scientists have mocked: “The planet will survive,” they say; “it’s the humans that may not.” There is automation bias, which describes a preference for algorithmic and other kinds of nonhuman economic systems unencumbered by regulation or restriction would solve the problem of global warming as naturally, as surely as they had solved the problems of pollution, inequality, justice, and conflict. These biases are drawn only from the A volume of the literature—and are just a sampling of that volume. Among the most destructive effects that appear later in the behavioral economics library are these: the bystander effect, or our tendency to wait for others to act rather than acting ourselves; confirmation bias, by which we seek evidence for what we already understand to be true, such as the promise that human life will endure, rather than endure the cognitive pain of reconceptualizing our world; the default effect, or tendency to choose the present option over alternatives, which is related to the status quo bias, or preference for things as they are, however bad that is, and to the endowment effect, or instinct to demand more to give up something we have than we actually value it (or had paid to acquire or establish it). We have an illusion of control, the behavioral economists tell us, and also suffer from overconfidence and an optimism bias. We also have a pessimism bias, not that it compensates—instead it pushes us to see challenges as predetermined defeats and to hear alarm, perhaps especially on climate, as cries of fatalism. The opposite of a cognitive bias, in other words, is not clear thinking but another cognitive bias. We can’t see anything but through cataracts of self-deception. Many of these insights may feel as intuitive and familiar as folk wisdom, which in some cases they are, dressed up in academic language. Behavioral economics is unusual as a contrarian intellectual movement in that it overturns beliefs—namely, in the perfectly rational human actor—that perhaps only its proponents ever truly believed, and maybe even only as economics undergraduates. But altogether the field is not merely a revision to existing economics. It is a thoroughgoing contradiction of the central proposition of its parent discipline, indeed to the whole rationalist self-image of the modern West as it emerged out of the universities of—in what can only be coincidence—the early industrial period. That is, a map of human reason as an awkward kluge, blindly self-regarding and selfdefeating, curiously effective at some things and maddeningly incompetent when it comes to others; compromised and misguided and tattered. How did we ever put a man on the moon? That climate change demands expertise, and faith in it, at precisely the moment when public confidence in expertise is collapsing, is another of its historical ironies. That climate change touches each of these biases is not a curiosity, or a coincidence, or an anomaly. It is a mark of just how big it is, and how much about human life it touches—which is to say, nearly everything.

### Warming---Earth Explosion Impact

#### Earth will explode

Dr. Tom J. Chalko 4, MSc, PhD, Senior Scientist, Head of Geophysics Division, Scientific E Research P/L, “No second chance? Can Earth explode as a result of Global Warming?,” NU Journal of Discovery, May 2001, revised 10/30/04, Vol. 3, pp 1-9

When there is a ”meltdown” in the inner core of a planet - it is likely to occur at the hottest point - in the center of the core. From there - there is nowhere to ”sink” and nowhere to ”disperse”. The molten nuclear fuel just remains molten.

We do not know what the exact composition of the solid inner core is in its very center, but just from the fact that it has been decaying for millions of years we can establish with considerable certainty that it should be quite a complex mixture of isotopes, even if we do not yet know any of these isotopes. When a mixture of isotopes becomes and remains molten, conditions arise for stratification of individual isotopes by their weight due to centrifugal motion of the planetary core. In essence, this process is very similar to the process that is used to ”enrich” a nuclear fuel in centrifugal equipment in order to make an atomic bomb.

If the molten volume of the inner core is large enough for a sufficient amount of time - the continuing stratification of isotopes will eventually lead to some of them achieving a ”critical mass”. When this occurs - the nuclear energy that was scheduled to be released over many millions of years may get released very quickly. A chain reaction will result in a gigantic atomic explosion.

Can a planet explode?

If a planet can indeed explode, and there was at least one such event somewhere in our Solar system in the distant past, we should be able to find the evidence of it today. This is due to the fact that the debris from the exploded planet would not vanish. Bits and pieces would not only remain, but their collective presence should still mark a trajectory (the orbit around the Sun) of the planet that exploded.

It is a well-known fact that there exists the so-called ”asteroid belt” in our Solar system. It is a ”belt” of a large number of asteroids that orbit the Sun along orbits that are located between Mars and Jupiter. At least 40,000 of these asteroids are thought to have diameters larger than 0.8 km (0.5 mile). The largest asteroid in the asteroid belt, called Ceres, is about 930 kilometers across.

The existence and the origin of the entire asteroid belt are long standing scientific puzzles. Why does the asteroid belt exist only between Mars and Jupiter and there are no asteroid belts between other planets?

The present belief is that planets in the solar system formed out of randomly distributed dust and other bits and pieces. Hence, it is also believed that the growth of a full-sized planet between Mars and Jupiter was ”aborted” during the early evolution of the solar system.

The explosion of a planet that existed between Mars and Jupiter is a much more logical and plausible explanation.

In Greek Mythology there is a story about a planet that exploded. The planet was called Phaëthon. In the myth Phaëthon was ”destroyed by a thunderbolt”. Did our ancestors embed this event in their belief system because they actually witnessed a planetary explosion and they just couldn’t explain it any other way? Can we determine today what is a myth and what is an actual fact? Plato, one of the greatest writers and philosophers of all time, was aware that the story of Phaëthon ”destroyed by a thunderbolt” had its origin in a real planetary event. He wrote [9] : ”Now this has the form of a myth, but really signifies decline of the bodies moving in the heavens...”.

The meaning of the word ”phaëthon” (ϕαεθων) in ancient Greek is ”giving light, luminous, brilliant, shining” [10]. Note that words ”phaëthon” and ”photon” originate from the same root (ϕαoς = ϕως) [10]. In the myth, Phaëthon is known as ”the son of Helios” (the son of the Sun) [9]. Doesn’t this hint that the planet Phaëthon was one of the brightest objects in the sky at night? Isn’t it obvious that the disappearance of such an object would attract attention of even a casual sky observer? The story of the destruction of Phaëthon ”by a thunderbolt”[9] indicates that our ancestors perceived its explosion to be as bright as lightning. Should we ignore a witness report of our ancestors embedded not only in their heritage but also in their language?

Early symptoms

Let’s examine some early symptoms of overheating of the planetary interior.

It is common knowledge (we all experience seasons) that solar heat is the dominant factor that determines temperatures on the surface of Earth. Under the polar ice however, the contribution of solar heat is minimal and this is where the increased heat contribution from the planetary interior can be seen best. Rising polar ocean temperatures and melting of polar caps should therefore be the first symptoms of overheating of the inner core reactor.

Accelerated melting of polar ice caps, heated from underneath have already been observed and quantified. It has been found that large Antarctic glaciers increased their melting rate up to 8 times in just 3 years [11][12].

It is astonishing that among 10 scientists who reported the accelerated melting of Antarctic glaciers in 2 articles [11][12] not even one was curious as to where the energy needed to increase the glacier melting rate 8 times comes from. From elementary physics we know that the melting rate is proportional to the amount of heat delivered to the melting medium. Hence, increasing the melting rate 8 times requires 8 times more energy. Now, the Sun does not deliver 8 times more energy under the polar ice, does it? My private communication with Australian Antarctic researchers confirms that they are aware that the Antarctic glaciers melt because they are heated from underneath.

If any of the Antarctic glaciers slide into the ocean we will observe a significant (and instant) rise in sea level. Unexpectedly quick global flooding is a real possibility. Has it happened before in history of humanity?

Evaporation from increased ocean surface will provide a heat sink for the planetary interior heat, but will also cause more frequent torrential rains and floods when it condenses. If, despite the above described cooling mechanisms, the polluted atmosphere is unable to allow radiation of enough heat into space, the planetary interior will continue to accumulate heat.

Warming of the planetary interior will accelerate tectonic motions (slip) of plates, continents and subduction zones due to increased temperatures in their respective plastic slip zones. An example of a recently reported event of an accelerated subduction zone slip in British Columbia, Canada, has been called a ”silent earthquake” [13]. Many more of these should be expected.

The next set of symptoms should be progressive activation of volcanoes around the globe. Heating and progressive melting of certain parts of the mantle and the crust will absorb significant amount of heat from the inner reactor and will also take time. This is why activation of volcanoes will be delayed in time.

The next stage will be a systematic increase in volcanic eruptions and the associated tectonic activity. Crystallization of the molten lava brought to the surface will release its heat into the atmosphere. Transport of hot lava in large amounts will be the last attempt of Nature to cool the planetary interior.

If at this stage the atmosphere is unable to allow enough heat radiation into space - the overheating of the inner core reactor will continue. The meltdown zone in the core will become established and will grow. It may take many months of horrific cataclysms on the surface of Earth before conditions for a chain reaction and subsequent explosion are created.

The best case scenario?

If we choose to ignore the early symptoms of overheating of the planetary interior, what is the best case scenario?

Imagine the first few hundred volcanoes exploding rather than simply erupting. Volcanic explosions release huge amounts of volcanic dust very high into the atmosphere. Imagine that the amount of dust is such that Sun rays do not reach the surface of the Earth. Sunlight becomes reflected by dust particles into space.

The surface of Earth without sunshine will freeze and will remain frozen until the dust in the atmosphere falls down. This process may take a long time. We may experience an ice age for several decades. In the meantime, the planetary interior will have an opportunity to cool down, because the amount of solar heat delivered to the surface of the planet will be dramatically reduced. Increased temperature difference between the hot core and the frozen surface of Earth will speed up the cooling process. Isn’t this a compelling mechanism for the development of an ice age? Is an ice age a natural mechanism for cooling the reactor called Planet Earth when it overheats for one reason or another?

Surprising support for the likelihood of the above scenario comes from archaeology. Apparently, the last ”mini” ice age on Earth occurred between 536 and 540 AD. Following the explosive eruption of just one or two volcanoes - trees on the entire planet stopped growing for several years. For several years there was no summer... [14] This is not a theory. The evidence is quite compelling. Disruption in tree growth is well documented and very accurately dated in the ”rings of growth” of very old trees that still grow on all continents. The evidence of a large amount of volcanic gasses in the atmosphere around 504±40 AD has been found embedded in polar ice caps at both poles.

The ice age of 536 AD was caused by the explosion of one or two volcanoes. Can you imagine the consequences of explosive eruptions of several hundred volcanoes?

To be or Not to be?

While politicians and businessmen still debate and dispute the need for reducing greenhouse emissions and take pride to evade accepting any responsibility, the process of overheating the inner core reactor has already begun - polar oceans have become warmer and polar caps have begun to melt [11][12].

Although the danger seems to come from the inside of our planet, the actual reason for the coming disaster is the pollution of the atmosphere [15], which is clearly our responsibility. At present, the atmospheric pollution increases daily...

Do we have enough imagination, intelligence and integrity to comprehend the danger before the situation becomes irreversible? There will be NO SECOND CHANCE...

### Warming---War Impact

#### Even lower increments make nuclear war inevitable in every region

Dr. Michael T. Klare 20, Five Colleges Professor of Peace and World Security Studies at Hampshire College, Ph.D. from the Graduate School of the Union Institute, BA and MA from Columbia University, Member of the Board of Director at the Arms Control Association, Defense Correspondent for The Nation, “How Rising Temperatures Increase the Likelihood of Nuclear War”, The Nation, 1/13/2020, https://www.thenation.com/article/archive/nuclear-defense-climate-change/

Climbing world temperatures and rising sea levels will diminish the supply of food and water in many resource-deprived areas, increasing the risk of widespread starvation, social unrest, and human flight. Global corn production, for example, is projected to fall by as much as 14 percent in a 2°C warmer world, according to research cited in a 2018 special report by the UN’s Intergovernmental Panel on Climate Change (IPCC). Food scarcity and crop failures risk pushing hundreds of millions of people into overcrowded cities, where the likelihood of pandemics, ethnic strife, and severe storm damage is bound to increase. All of this will impose an immense burden on human institutions. Some states may collapse or break up into a collection of warring chiefdoms—all fighting over sources of water and other vital resources.

A similar momentum is now evident in the emerging nuclear arms race, with all three major powers—China, Russia, and the United States—rushing to deploy a host of new munitions. This dangerous process commenced a decade ago, when Russian and Chinese leaders sought improvements to their nuclear arsenals and President Barack Obama, in order to secure Senate approval of the New Strategic Arms Reduction Treaty of 2010, agreed to initial funding for the modernization of all three legs of America’s strategic triad, which encompasses submarines, intercontinental ballistic missiles, and bombers. (New START, which mandated significant reductions in US and Russian arsenals, will expire in February 2021 unless renewed by the two countries.) Although Obama initiated the modernization of the nuclear triad, the Trump administration has sought funds to proceed with their full-scale production, at an estimated initial installment of $500 billion over 10 years.

Even during the initial modernization program of the Obama era, Russian and Chinese leaders were sufficiently alarmed to hasten their own nuclear acquisitions. Both countries were already in the process of modernizing their stockpiles—Russia to replace Cold War–era systems that had become unreliable, China to provide its relatively small arsenal with enhanced capabilities. Trump’s decision to acquire a whole new suite of ICBMs, nuclear-armed submarines, and bombers has added momentum to these efforts. And with all three major powers upgrading their arsenals, the other nuclear-weapon states—led by India, Pakistan, and North Korea—have been expanding their stockpiles as well. Moreover, with Trump’s recent decision to abandon the Intermediate-Range Nuclear Forces (INF) Treaty, all major powers are developing missile delivery systems for a regional nuclear war such as might erupt in Europe, South Asia, or the western Pacific.

### Warming---War Impact---Ext

#### Climate change exacerbates every source of global insecurity

Mark Nevitt 21, Associate Professor of Law, Syracuse University College of Law, served for twenty years in the U.S. Navy as both a tactical jet aviator and environmental lawyer in national security assignments throughout the world, previously served as the Sharswood Fellow at the University of Pennsylvania Law School and Class of 1971 Distinguished Professor of Leadership & Law at the U.S. Naval Academy, “Is Climate Change a Threat to International Peace and Security?” 2021, 42 Mich. J. Int'l L. 527, https://repository.law.umich.edu/cgi/viewcontent.cgi?article=2115&context=mjil

II. Climate Change Meets International Peace and Security

A. Climate Change’s Destabilizing Security Impacts

We are entering the climate-security century. As climate change destabilizes the physical environment, it also destabilizes existing governance structures.22 The destabilizing effect of climate change forces us to reexamine the root causes of instability and the accompanying tools at our collective disposal required to combat the climate crisis. According to IPCC and a near-universal scientific consensus, climate change is “extremely likely” caused by human activity.23 And a growing number of scholars now persuasively argue that we must broaden our definition of security to encompass climate change, pandemics, and non-traditional threats that have debilitating impacts on health and human security.24

Consider just a few recent examples of climate change’s destructive path. In the past two years, massive wildfires destroyed large swaths of Australia and California.25 Hurricanes Michael and Florence ravaged the coastlines of Florida and North Carolina.26 Water shortages, food security, and crop instability—all exacerbated by climate change—contributed to a rapidly deteriorating security situation in many developing nations.27 Scholars now make data-driven, empirical connections between climate change and increases in violent conflict.28 Both climate scientists and national security professionals forecast a dangerous world increasingly defined by climate change.29 Consider the following four ways that climate change impacts international peace and security:

• Extreme Weather. The American Meteorological Society recently found that anthropogenic climate change increased the likelihood and severity of fifteen out of sixteen recent extreme weather events.30 As climate scientists refine their models, we will be able to predict with greater certainty the future likelihood of extreme weather events and better pinpoint their size, location and devastating effects.

• Climate migrants.31 We have witnessed the rise of crossborder climate change migrants that are fleeing their homes in response to climate-exacerbated drought and other environmental hazards. Future climate migrant estimates look bleak: one study found that two-thirds of the world’s population faces severe water shortages, a driver of cross-border human migration.32 The Syrian refugee crisis, for example, was preceded by a massive, climate-exacerbated drought that saw internal displacement from rural areas to cities within Syria. This created the conditions for political unrest that quickly spread outside Syria’s borders.33 Yet there is a widening international governance gap to address this pending explosion in climate migration.34 Will the Council play a role in mitigating the effects on the hundreds of millions of climate migrants anticipated this century?

• Climate Change and Armed Conflict. Studies predict an increasingly dangerous, Hobbesian world where climate-driven food insecurity, resource wars, and physical destabilization lead to armed conflict, violence, and chaos.35 Scholars now demonstrate a linkage between climate change’s impacts and violent conflict.36 The Council specifically connected climate change’s impacts to a conflict area in a series of recent Security Council Resolutions. This reinforces the Council’s competence in tackling threats to international peace and security in conflict areas.37 Will the Council build upon these efforts in addressing climate change’s role in resource wars and conflict?

• Nation Extinction. Scientists now predict that four Pacific Small Island Developing States will be uninhabitable by midcentury due to climate change-driven sea level rise and wavedriven flooding.38 These nations will lose large swaths of their territory, potentially leading to wholesale abandonment. Will the Council—which has the express responsibility to maintain peace and security—stand by while nations lose their territorial integrity and, potentially, their sovereignty?39

These four examples—extreme weather, climate migration, armed conflict, and nation extinction—are a mere snapshot of climate change’s security impacts this century.

Despite these threats, our international legal governance institutions have not kept pace. They have lagged behind on making scientific advances, failing to address climate change’s security implications. As of this writing, we lack a legally binding path forward to lower worldwide GHG emissions. Indeed, scientists and security professionals estimate that our collective failure to keep the average global temperatures from rising above two degrees Celsius will have devastating consequences, particularly for developing nations with limited climate adaptation resources.40 Increases in global temperature beyond two degrees could potentially trigger climate “tipping points,” pouring gasoline on an already simmering climate fire. Further, climate attribution science advances showcase that climate change increases the likelihood of extreme weather throughout the world.41

In response to our increased understanding of climate change’s security impacts, scientists and policy experts have begun to adopt a security vernacular. Climate change is not just an environmental concern—it acts as both a “threat multiplier” and a “catalyst for conflict.”42 The 2015 Paris Climate Agreement labels climate change an “urgent threat” while recognizing climate change’s pernicious impacts on food security.43 Due to scientific advances, we now have a much clearer understanding of the relationship between human activity, climate change, and global security.44

### Warming---Turns Disease

#### Warming causes pandemics---expands transmission and habitat range

Kumar et al. 21, Department of Civil & Environmental Engineering, Birla Institute of Technology, “1 - Climate Change and Existential Threats,” Global Climate Change, edited by Suruchi Singh et al., Elsevier, 01/01/2021, pp. 1–31 ScienceDirect, doi:10.1016/B978-0-12-822928-6.00005-8

13. Health effects

Climate change would be associated with adverse irreversible impact on the health of animals, including humans, and plants, and there could be a massive loss of life (Houghton et al., 1995). The increase in temperature causes excess heat, which would be unbearable for organisms, killing them on multiple occasions (Kalkstein, 1995). Dependence on cooling technology, for relief, could be counterproductive in the longer run. Additionally, such technologies produce gases polluting the atmosphere, affecting other parts of the ecosystem and causing deleterious effects to each individual (Burnett et al., 1994, 1997; Morris et al., 1995; Schwartz and Morris, 1995).

The increase in extreme, unpredictable weather events, such as floods, cyclones, droughts, and forest fires, would damage to life and property massively. Additionally, they bring about innumerous diseases in plants and animals (Patz et al., 1996; Epstein, 2001, 2002). Furthermore, there would be damage to ecosystem services, especially the loss of medicinal plants. Extreme weather events would damage the productivity of soil, resulting in inhibition of plant growth (Last et al., 1998). An increase in plant diseases would be associated with climate change. Pathogens affecting the plants could spread in their geographical extent with a warming of the climate and increase in humidity with greater precipitation (Crawford et al., 1991; Luo et al., 1995, 2003; Brasier, 1996; Carter et al., 1996).

Storm surges and inland intrusion of saline seawater would make the agricultural soil infertile, consequentially damaging the plants (Gornitz, 1991; Rahmstorf, 2017). It could be associated with contamination of groundwater, further aggravating the damage on the people living near to the coasts (Beckman, 1997). Changes in rainfall pattern, increasing the humidity levels, are also associated with an increase in disease outbreak by increasing the number and persistence of vectors and pathogens (Jofre et al., 2009). Changes in wind patterns would also affect the rollout of diseases (Chen et al., 2010).

Warmer temperatures would expand the habitat of several species of vectors, such as mosquitoes, causing a number of diseases such as malaria, dengue, and encephalitis (Epstein, 1997, 2002). Furthermore, a rise in temperature would cause an expansion in zones of disease transmission (Watson, 1998). An increase in El-Nino events has been linked to causing tropical diseases such as cholera, and climate change would result in further outbreaks of such diseases (Bouma and Dye, 1997). Climate change would increase the incidences of infectious diseases by affecting the pathogen, vector, host, or their living environment. Warming of climate has been reported to expand the range of such infectious disease (Patz et al., 1996; Epstein, 1999, 2001; Altizer et al., 2013; Bouzid et al., 2014). Diseases such as Hantavirus, Salmonellosis, and Giardiasis have started to come into the picture because of warmer climate and extreme weather events (Chretien et al., 2015).

#### Warming-induced outbreaks circumvent burnout by activating latent pathogens

David **Wallace-Wells 19**, National Fellow at New America, deputy editor of New York Magazine, “II. Elements of Chaos,” The Uninhabitable Earth: Life After Warming, 02/19/2019, Crown/Archetype

Rock is a record of planetary history, eras as long as millions of years flattened by the forces of geological time into strata with amplitudes of just inches, or just an inch, or even less. Ice works that way, too, as a climate ledger, but it is also frozen history, some of which can be reanimated when unfrozen. There are now, trapped in Arctic ice, diseases that have not circulated in the air for millions of years—in some cases, since before humans were around to encounter them. Which means our immune systems would have no idea how to fight back when those prehistoric plagues emerge from the ice. Already, in laboratories, several microbes have been reanimated: a 32,000-year-old “extremophile” bacteria revived in 2005, an 8-million-year-old bug brought back to life in 2007, a 3.5-million-year-old one a Russian scientist self-injected, out of curiosity, just to see what would happen. (He survived.) In 2018, scientists revived something a bit bigger—a worm that had been frozen in permafrost for the last 42,000 years.

The Arctic also stores terrifying diseases from more recent times. In Alaska, researchers have discovered remnants of the 1918 flu that infected as many as 500 million, and killed as many as 50 million—about 3 percent of the world’s population, and almost six times as many as had died in the world war for which the pandemic served as a kind of gruesome capstone. Scientists suspect smallpox and the bubonic plague are trapped in Siberian ice, among many other diseases that have otherwise passed into human legend—an abridged history of devastating sickness, left out like egg salad in the Arctic sun.

Many of these frozen organisms won’t actually survive the thaw; those that have been brought back to life have been reanimated typically under fastidious lab conditions. But in 2016, a boy was killed and twenty others infected by anthrax released when retreating permafrost exposed the frozen carcass of a reindeer killed by the bacteria at least seventy-five years earlier; more than two thousand present-day reindeer died.

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What concerns epidemiologists more than ancient diseases are existing scourges relocated, rewired, or even re-evolved by warming. The first effect is geographical. Before the early modern period, human provinciality was a guard against pandemic—a bug could wipe out a town, or a kingdom, or even in an extreme case devastate a continent—but in most instances it couldn’t travel much farther than its victims, which is to say, not very far at all. The Black Death killed as much as 60 percent of Europe, but consider, for a gruesome counterfactual, how big its impact might have been in a truly globalized world.

Today, even with globalization and the rapid intermingling of human populations, our ecosystems are mostly stable, and this functions as another limit—we know where certain bugs can spread, and know the environments in which they cannot. (This is why certain vectors of adventure tourism require dozens of new vaccines and prophylactic medications, and why New Yorkers traveling to London don’t need to worry.)

But global warming will scramble those ecosystems, meaning it will help disease trespass those limits as surely as Cortés did. The footprint of every mosquito-borne illness is presently circumscribed, but those borders are disappearing rapidly, as the tropics expand—the current rate is thirty miles per decade. In Brazil, for generations, yellow fever sat in the Amazon basin, where the Haemagogus and Sabethes mosquitoes thrived, making the disease a concern for those who lived, worked, or traveled deep into the jungle, but only for them; in 2016, it left the Amazon, as more and more mosquitoes fanned out of the rain forest; and by 2017 it had reached areas around the country’s megalopolises, São Paulo and Rio de Janeiro—more than thirty million people, many of them living in shantytowns, facing the arrival of a disease that kills between 3 and 8 percent of those infected.

Yellow fever is just one of the plagues that will be carried by mosquitoes as they migrate, conquering more and more of a warming world—the globalization of pandemic disease. Malaria alone kills a million people each year already, infecting many more, but you don’t worry much about it if you are living in Maine or France. As the tropics creep northward and mosquitoes migrate with them, you may; over the course of the next century, more and more of the world’s population will be living under the shadow of diseases like these. You didn’t much worry about Zika before a couple of years ago, either.

As it happens, Zika may also be a good model of a second worrying effect—disease mutation. One reason you hadn’t heard about Zika until recently is that it had been trapped in Uganda and Southeast Asia; another is that it did not, until recently, appear to cause birth defects. Scientists still don’t entirely understand what happened or what they missed, even now, several years after the planet seemed gripped by panic about microcephaly: it could be that the disease changed as it came to the Americas, the result of a genetic mutation or in adaptive response to a new environment; or that Zika produces those devastating prenatal effects only when another disease is present, possibly one less common in Africa; or that something about the environment or immunological history in Uganda protects mothers and their unborn children.

But there are things we do know for sure about how climate affects some diseases. Malaria, for instance, thrives in hotter regions, which is one reason the World Bank estimates that by 2030, 3.6 billion people will be reckoning with it—100 million as a direct result of climate change.

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Projections like those depend not just on climate models but on an intricate understanding of the organism at play. Or, rather, organisms. Malaria transmission involves both the disease and the mosquito; Lyme disease, both the disease and the tick—which is another epidemiologically threatening creature whose universe is rapidly expanding, thanks to global warming. As Mary Beth Pfeiffer has documented, Lyme case counts have spiked in Japan, Turkey, and South Korea, where the disease was literally nonexistent as recently as 2010—zero cases—and now lives inside hundreds more Koreans each year. In the Netherlands, 54 percent of the country’s land is now infested; in Europe as a whole, Lyme caseloads are now three times the standard level. In the United States, there are likely around 300,000 new infections each year—and since many of even those treated for Lyme continue to show symptoms years after treatment, the numbers can stockpile. Overall, the number of disease cases from mosquitoes, ticks, and fleas have tripled in the U.S. over just the last thirteen years, with dozens of counties across the country encountering ticks for the first time. But the effects of the epidemic can be seen perhaps most clearly in animals other than humans: in Minnesota, during the 2000s, winter ticks helped drop the moose population by 58 percent in a single decade, and some environmentalists believe the species could be eradicated entirely from the state as soon as 2020. In New England, dead moose calves have been found suckling as many as 90,000 engorged ticks, often killing the calves not through Lyme disease but simple anemia, the effect of that number of bugs each drawing a few milliliters of blood from the moose. Those that survive are far from robust, many having scratched so incessantly at their own hides to clear it of ticks that they completely eliminated their own hair, leaving behind a spooky gray skin that has earned them the name “ghost moose.”

Lyme is still, in relative terms, a young disease, and one we don’t yet understand all that well: we attribute a very mysterious and incoherent set of symptoms to it, from joint pain to fatigue to memory loss to facial palsy, almost as a catchall explanation for ailments we cannot pinpoint in patients who we know have been bitten by a bug carrying the bug. We do know ticks, however, as surely as we know malaria—there are not many parasites we understand better. But there are many, many millions we understand worse, which means our sense of how climate change will redirect or remodel them is shrouded in a foreboding ignorance. And then there are the plagues that climate change will confront us with for the very first time—a whole new universe of diseases humans have never before known to even worry about.

“New universe” is not hyperbole. Scientists guess the planet could harbor more than a million yet-to-be-discovered viruses. Bacteria are even trickier, and so we probably know about even fewer of them.

Perhaps scariest are those that live within us, peacefully for now. More than 99 percent of even those bacteria inside human bodies are presently unknown to science, which means we are operating in near-total ignorance about the effects climate change might have on the bugs in, for instance, our guts—about how many of the bacteria modern humans have come to rely on, like unseen factory workers, for everything from digesting our food to modulating our anxiety, could be rewired, diminished, or entirely killed off by an additional few degrees of heat.

Overwhelmingly, of course, the viruses and bacteria making homes inside us are nonthreatening to humans—at present. Presumably, a difference of a degree or two in global temperature won’t dramatically change the behavior of the majority of them—probably the vast majority, even the overwhelming majority. But consider the case of the saiga—the adorable, dwarflike antelope, native to central Asia. In May 2015, nearly two-thirds of the global population died in the span of just days—every single saiga in an area the size of Florida, the land suddenly dotted with hundreds of thousands of saiga carcasses and not one lone survivor. An event like this is called a “mega-death,” this one so striking and cinematic that it gave rise, immediately, to a whole raft of conspiracy theories: aliens, radiation, dumped rocket fuel. But no toxins were found by researchers poking through the killing fields—in the animals themselves, in the soil, in the local plants. The culprit, it turned out, was a simple bacteria, Pasteurella multocida, which had lived inside the saiga’s tonsils, without threatening its host in any way, for many, many generations. Suddenly it had proliferated, emigrated to the bloodstream, and from there to the animals’ liver, kidneys, and spleen. Why? “The places where the saigas died in May 2015 were extremely warm and humid,” Ed Yong wrote in The Atlantic. “In fact, humidity levels were the highest ever seen in the region since records began in 1948. The same pattern held for two earlier, and much smaller, die-offs from 1981 and 1988. When the temperature gets really hot, and the air gets really wet, saiga die. Climate is the trigger, Pasteurella is the bullet.”

This is not to say we now understand what precisely about humidity weaponized Pasteurella, or how many of the other bacteria living inside mammals like us—the 1 percent we have identified, or perhaps more worryingly the 99 percent we house without any knowledge or understanding—might be similarly triggered by climate, friendly, symbiotic bugs with whom we’ve lived in some cases for millions of years, transformed suddenly into contagions already inside us. That remains a mystery. But ignorance is no comfort. Presumably climate change will introduce us to some of them.

### Warming---Turns Econ

#### Warming turns econ

Kumar et al. 21, Department of Civil & Environmental Engineering, Birla Institute of Technology, “1 - Climate Change and Existential Threats,” Global Climate Change, edited by Suruchi Singh et al., Elsevier, 01/01/2021, pp. 1–31 ScienceDirect, doi:10.1016/B978-0-12-822928-6.00005-8

Correspondingly, the increase in temperature caused because of global warming would result in a drastic reduction in human productivity. The creation of heat stress would reduce the cognitive ability and working hours (i.e., working potential), by imposing biological constraints on working intensity (Carleton and Anne, 2018). There would be an accompanied reduction in labor productivity, affecting the economy holistically (Day et al., 2019). Additionally, the increase in temperature would increase the sea level and trigger biodiversity loss, which has been discussed in later sections.

### Warming---Turns Food

#### Warming turns food security

Kumar et al. 21, Department of Civil & Environmental Engineering, Birla Institute of Technology, “1 - Climate Change and Existential Threats,” Global Climate Change, edited by Suruchi Singh et al., Elsevier, 01/01/2021, pp. 1–31 ScienceDirect, doi:10.1016/B978-0-12-822928-6.00005-8

14. Food security

The population explosion has resulted in an increase in food demand to very high levels, eventually creating food security issues. With persistent climate change, there would be an enhancement of the problem of food shortage (Hoogenboom, 2000; Lal, 2005; Howden et al., 2007). Floods and droughts would damage a lot of arable lands apart from the destruction of standing crops. Famine could arise from such developments (Challinor and Wheeler, 2008; Challinor et al., 2009; Gornall et al., 2010). Changes in the weather pattern have affected the production of crops throughout the globe. Additionally, pests may develop, which could destroy crops hugely, aggravating the problem of food scarcity (Aggarwal et al., 2006; Ziska et al., 2011). Irrigation would be affected due to alterations in rainfall patterns or differential melting of glaciers, ultimately affecting food security (Chang et al., 2002; Wilby, 2005; Wilby et al., 2006). Additionally, warmer temperatures might increase or decrease the crop production depending upon the optimal growth requirements for each crop. It has been reported that yield of rice increases, and maize production decreases at higher temperatures (Reddy and Pachepsky, 2000; Luo et al., 2003; Popova and Kercheva, 2005; Krishnan et al., 2007; Soler et al., 2007). Furthermore, climate change might affect soil properties such as soil water balance, creating food shortages (Fischer et al., 2007). Interestingly, the growth period of crops might decrease with changes in climatic conditions (Khan et al., 2009).

### Warming---Turns Radiation

#### Spreads radiation and ABR

Celine Castronuovo 10/1, staff at the Hill, “Warming Arctic could spread nuclear waste, unknown viruses: report,” The Hill, 10-1-2021, https://thehill.com/policy/equilibrium-sustainability/574904-warming-arctic-could-spread-nuclear-waste-unknown-viruses?amp

As temperatures continue to rise in the Arctic, thawing frozen land that scientists have already said contributes to greenhouse gas emissions could also spread nuclear waste and radiation, as well as unknown viruses and antibiotic-resistant bacteria, according to new research released Thursday.

A report published in the scientific journal Nature Climate Change noted that the permanently frozen land, called permafrost, thawing in the Arctic at increasing rates due to global warming could potentially release radioactive waste from Cold War-era weapons production and damage from mining.

The study's researchers noted that between 1955 to 1990, the Soviet Union conducted a total of 130 nuclear weapons tests in the atmosphere and near the ocean's surface off the coast of northwest Russia.

While the Russian government said it has since launched a cleanup of the area, the authors of Thursday's study found that high levels of radioactive substances have recently been detected in the area.

Additionally, the authors said that deep permafrost in the Arctic, which is roughly a million years old, contains bacteria that, because frozen, has not been exposed to modern antibiotics on Earth.

The report noted that the potential thawing of the permafrost could melt into oceans and eventually create antibiotic-resistant strains of existing bacteria.

One of the report's authors, Arwyn Edwards from Wales' Aberystwyth University, told the BBC that while much of the Arctic still remains unknown, changes in the region's "climate and ecology will influence every part of the planet as it feeds carbon back to the atmosphere and raises sea levels."

"This review identifies how other risks can arise from the warming Arctic," he said. "It has long been a deep-freezer for a range of harmful things, not just greenhouse gases."

"We need to understand more about the fate of these harmful microbes and pollutants and nuclear materials to properly understand the threats they may pose," he argued.

### General Biod---AT: Defense

#### Biod loss causes extinction.

Jill Atkins & Warren Maroun 18, Atkins is from the Accounting and Financial Management Division, University of Sheffield; Maroun is from the School of Accountancy, University of the Witwatersrand, Johannesburg, “Integrated Extinction Accounting and Accountability: Building an Ark,” Accounting, Auditing & Accountability Journal, vol. 31, no. 3, Emerald Publishing Limited, 01/01/2018, pp. 750–786

3. Mass extinction: understanding the causes

There have been five previous mass extinctions on earth. These occurred at the following points of time: at the end of the Ordovician period; in the late Devonian period; at the end of the Permian period; at the end of the Triassic period and, lastly, at the end of the Cretaceous period which saw the death of the dinosaurs. Scientists have found that it takes tens of millions of years for a complete recovery in biodiversity following a mass extinction (Wilson, 1992). The current era of mass extinctions is different. Rather than being caused by external, environmental factors such as a meteoric collision or global warming/cooling, this extinction phase arises from the ecosystem itself, as:

[…] we are now living in the middle of another such cataclysm which has a new and quite different cause. The absolute, unprecedented dominance of one species – us – is putting the existence of a large proportion of all other life in jeopardy (Schoon, 1996, p. 20, emphasis added).

Habitat loss, mono agriculture, global warming and climate change, invasions by alien species, pesticide and herbicide use, pollution, all results of human activities, are contributing to mass extinction. Indeed, a salient cause of extinction is habitat loss, as we have witnessed decades of rainforest depletion, mono agriculture on a massive, industrial scale and destruction of natural habitats by businesses, city development and just about all means imaginable. Scientists have developed models and theories to demonstrate a mathematical relationship between habitat size and the number of species supported: as habitat shrinks, species disappear in the local ecosystem. Island theory represents one approach to habitat loss which shows how habitats are effectively islands of biodiversity (see, e.g. Shafer, 1990) which highlights the need to protect each one. Browswimmer (2003) addressed the onset of current mass extinction, identifying business, capitalism and market forces as the cause and proposing democratic ecological socialism. Business and corporate activity are not generally seen as a potential part of the solution but we argue here that they can be, through accounting and accountability mechanisms.

In addition to the commonly accepted causes of mass extinction, there are additional scientific processes which contribute to the speed of extinction. Alleles are forms of gene carrying certain characteristics such as colour or negative traits which can cause a deformity, a mutation. In a large population, these alleles remain in balance. As soon as the population of a species contracts below a critical number, reproduction can lead to an imbalance in the characteristics, with negative alleles dominating, leading to vulnerability of the species and rendering extinction more likely:

Small populations therefore accumulate deleterious mutations. Left unchecked, the effect of these fixed alleles is to reduce the reproductive capacity of a species, eventually to the point of extinction (Whitlock, 2000, p. 1855).

As we can see from the above discussion, a widely held belief that the world appears to be in the grips of mass extinction of species has circulated for several decades and by no means constitutes “breaking news”.

4. Biodiversity and the interconnectedness of species

When researching for our paper, the authors have given numerous presentations and had in-depth conversations about extinction with friends, academic colleagues and practitioners from accounting and the investment industry. It has not been uncommon for someone to comment, “so what?, “why does it matter if rhinoceros disappear?”, “who would miss insects?” An especially poignant comment at a recent debate on the financial materiality of bee decline was along the lines that although a “trade off” between feeding people and saving bees would not be welcome, it may be an inevitability if we are to “feed the world”[9]. These views demonstrate at best, a limited understanding of ecology and the ecosystem and at worst, apathetic ignorance. An understanding of how important each and every species is to the ecosystem requires a brief tour of ecology and biology. A species is commonly defined as:

[…] a population whose members are able to interbreed freely under natural conditions (Wilson, 1992, p. 36).

Further, a species is a “closed gene pool” and is the end of millions, if not billions, of years of evolution. Darwin’s theory of evolution via natural selection, or survival of the fittest, has been reinterpreted and to a large extent supported, through genetics in recent decades. Biodiversity, however, is seen as a by-product of evolution (Wilson, 1992). Evolution of species can occur in a linear fashion such that the number of species remains the same, in which case there would be no increase in biodiversity. Some hold beliefs in alternative paths to species proliferation such as the Creationist view, taking Genesis (the first book of the Bible) as a literal account of how biodiversity was created at one point in time. Taking an evolutionary perspective, there are other accepted forces which have led to the vast variety of species on earth. For example, intrinsic isolating mechanisms arise from events as simple as a river cutting through a species population such that over time the two separated groups may develop different mating calls or a preference for different habitats which prevents them from interbreeding and results in ultimately a separate species. This is one of many ways scientists believe biological diversity has evolved. Others include genetic drift, the “founder effect”, mutation and adaptive radiation (Wilson, 1992). Time also appears to be a crucial element:

Great biological diversity takes long stretches of geological time and the accumulation of large reservoirs of unique genes. The richest ecosystems build slowly over millions of years (Wilson, 1992, p. 68).

However, species were created, they are now disappearing. The interdependence of species within the ecosystem cannot be overestimated as:

A great many species are critical for the functioning of ecosystem processes such as regulation and purification of water and air, climatic conditions, pollination and seed dispersal, and control of pests and diseases. And by affecting nutrient and water cycling systems and soil fertility, some species indirectly support the supply of food, fibre, fresh water and medicines (WWF, 2016, p. 50).

Some species, such as bees, have an obvious “use” to the human race and their decline and for many bee species their impending extinction, are already presenting serious problems for world food production due to the depletion of pollination “services”. However, why would species such as earwigs, cockroaches, scary spiders and other creepy crawlies be worth conserving? There is a simple answer. All species are interconnected within the planet’s ecosystem and within their own, local habitats and ecosystems, such that we cannot begin to truly understand how the extinction of one species can affect the whole. The following chilling quote drives this message home:

So important are insects and other land-dwelling arthropods that if all were to disappear, humanity probably would not last more than a few months. Most of the amphibians, reptiles, birds, and mammals would crash to extinction about the same time (Wilson, 1992, p. 125).

Insects are just one vital group of species upon which all others depend, along food chains and in ecosystems, as:

[…] there are many individual species which have hundreds of other species completely dependent on their existence – because they provide food, shelter, sanctuary or some other crucial resource (Schoon, 1996, p. 17).

There are, it appears from research and experience, “keystone” species, whose disappearance can have devastating effects on their local ecosystem. Examples of these include the sea otter, rhinoceros, elephant, driver ants and pollinators (Wilson, 1992). The infinite complexity of interconnectedness between species which constitute ecosystems cannot be overemphasised and, with current knowledge, is by no means understood:

[T]he unpredictability of ecosystems is a consequence of the particularity of the species that compose them. Each species is an entity with a unique evolutionary history and set of genes, and so each species responds to the rest of the community in a special way […] [O]nly with a detailed knowledge of the life cycles and biology of large numbers of constituent species will it be possible to create principles and methods that can precisely chart the future of ecosystems in the face of the human onslaught (Wilson, 1992, pp. 169-170).

### Specific Biod---Bees---2NC

#### They dropped it’s causing bee collapse---that’s Marques---extinction

Jacy Gomez 18, Associate at Keybridge Communications, Contributor at U.S. News & World Report, Contributor to the Washington Examiner's Beltway Confidential Blog, Communications Specialist and Former Congressional Staffer for U.S. Sen. Chuck Grassley, “Bees are Critical to our Survival”, The Gazette, 2-1, http://www.thegazette.com/subject/opinion/guest-columnist/bees-are-critical-to-our-survival-20180201

An attack on these important insects is exceedingly problematic. Wild bees are critical to safeguarding U.S. food supplies and growing our economy. Such utter disregard for bees — whether domestic or wild — puts the species one step closer to extinction.

Wild bee populations have dramatically declined in recent years. At least 37 percent of bee species are declining, according a 2015 United Nations report. Worse still, roughly 9 percent of bee species are facing extinction.

Within the past two decades, some bee populations declined by more than 90 percent.

There are several reasons. Take pesticides. More than 1 billion pounds of pesticides are used in the United States each year. Worldwide, that number is 5.6 billion pounds.

Pesticides can be poisonous to bees. In Oregon, for example, at least 50,000 bumblebees died suddenly after their tree habitat was sprayed with a neonic dinoteguran to control aphids.

Loss of habitat also is a major threat. Here in the United States, we lose about 6,000 acres of habitat per day thanks to land development projects, ethanol production and farm crops. The lack of available habitat makes it nearly impossible for bees and other pollinators to survive.

Climate change is another reason. As Defenders of Wildlife explains, “Shifting temperature and precipitation patterns (alter) the distribution of plants and their flowering times.” This makes it difficult for bees to receive proper nourishment.

Regardless of the cause of their demise, diminishing bee populations are a major threat to human survival.

For starters, bees are critical to safeguarding the global food supply. By transporting pollen between flowers and crops, bees are responsible for producing many important crops that humans enjoy daily. In the United States, bees pollinate more than 90 commercial crops. These crops include nuts, fruits and vegetables.

The same is true worldwide. In fact, the United Nations’ Food and Agriculture Organization reports that roughly 90 percent of the global food supply originates from 100 crop species. Of those species, more than 71 percent rely on bees for pollination.

You can thank bees for one of every three bites of food you eat in your lifetime. According to a June 2014 White House report, bees contribute more than $15 billion to our economy through their role as pollinators.

California’s almond industry, almost exclusively pollinated by honeybees, was valued at roughly $533 billion in 2015.

It may seem counterintuitive to care about bugs, but bees are a critical part of human survival.

### Specific Biod---Forests---2NC

#### Growth is collapsing forests---extinction

Luiz Marques 20, associate professor, Department of History, State University of Campinas (UNICAMP) Campinas/SP - Brasil, editor and consultant for the Historia Viva magazine, worked as an analyst at the National Center for Scientific Research in France, has written or collaborated on hundreds of articles and dozens of books, “Decrease and Degradation of Forests,” Capitalism and Environmental Collapse, Springer International Publishing, 2020, pp. 41–64 DOI.org (Crossref), doi:10.1007/978-3-030-47527-7\_2

2.1 We Can’t Live Without Forests

Michael Jenkins and David Kaimowitz began a preface to a study on forest conservation with these words: “The future of the world’s forests and the future of millions of the world’s poorest people are inextricably linked” (Scherr et al. 2003). This is correct. But the most accurate statement is the one expressed in the title and central message of a document launched in 2014 by FAO: We can’t live without forests. Forests are key to supporting life on Earth. As living communities in which trees and other plants, animals, fungi, and microorganisms reproduce and interact in various ways, forests are recognized as crucial for soil preservation, water regulation, nutrient cycling, trade balance of gases in the atmosphere, and global climatic stability. Furthermore, “forests are home to more than 80% of all terrestrial species of animals, plants, and insects” (UNDP 2015; FAO 2012), including the vast majority of threatened species. Thus, it is impossible to exaggerate the importance of two facts:

1. FAO’s State of the World’s Forests 2012 estimates that, by the end of the last Ice Age, forests covered 60 million km2; today, “30 percent of the global forest cover has been cleared, while another 20 percent has been degraded. Most of the rest has been fragmented, leaving only about 15 percent intact.”

2. Contrary to FAO’s Global Forest Resources Assessment 2015 (FRA 2015), the pace of deforestation has accelerated in the first two decades of the twenty-first century (Tollefson 2015).

### Specific Biod---Forests---AT: Defense

#### Growth deforests---extinction.

Dominik Goldstein 16, “Eliminating deforestation and forest degradation in order to prevent species from extinction, especially with regard to areas in Asia, Africa and South America,” http://www.balmun.de/fileadmin/2016/Research\_Reports/RR\_EC\_I\_Deforestation.pdf

Deforestation and forest degradation are undoubtedly part of the largest environmental problems our world is facing today. Of the 16 million square kilometers of forest that once covered the earth’s surface, only 6.2 million remain up to date. 2.3 million have been destroyed between 2000 and 2012 alone. Not only does this threaten the balance of local important environmental factors such as water cycles and greenhouse gas decomposition and harm the economy and society of affected areas, but it also endangers many different species, as 80% of all biodiversity is found in forests. The entire planet and its population rely on the fate of forests, it is vital that the issues of deforestation and forest degradation are tackled thoroughly, however, it can only be achieved through close cooperation amongst all UN member nations.

#### Lynchpin of the environment---extinction

Richard Nassar & Jamal Payne 15, Richard, Associate Professor, History & Near Eastern Languages and Civilization; Jamal, Dean of the College of Social and Behavioral Sciences at California State University, San Bernardino, "Politics and Culture in the Developing World," 2015, Economic and Political Costs of Development, p. 139

Numerous problems are created by deforestation. Many plant and animal species are destroyed, thereby reducing the earth’s biodiversity. The preservation of biodiversity is essential to many scientific advances in industry, agriculture, and medicine. Destruction of the rain forests is also seen as contributing to climate change. Areas become hotter and drier after forests are destroyed. Deforestation may actually change an area from being moist and humid to a desert. Deforestation releases carbon dioxide stored in vegetation and in the soil. Because large rain forests, such as the Amazon, have an impact on the global climate, their destruction is seen as helping to create the problem of global warming and climate instability. Agricultural productivity declines as rainfall diminishes and as soil erosion becomes more extensive. In some areas, destructive floods become more prevalent even as groundwater reserves fall. Homes, farms, the infrastructure essential to development, and industrial plants are destroyed by extreme weather conditions. People who depend on forest products for their livelihoods must find other sources of income as deforestation expands. Forests provide a habitat for animals that help to pollinate plants and control agricultural pests. Deforestation in China facilitates the spread of dust from the Gobi Desert. Dust covers windowsills and blows under doors to cover floors and walls. Concerns about deforestation have influenced countries, non-state organizations, and individuals to plant more trees, a development that is slowing the pace of deforestation.25 Destruction of the forests ultimately threatens human survival.

### Specific Biod---Insects---2NC

#### They dropped insects are going extinct from chemical pollution and warming---that’s Marques

#### They’re key---extinction

Dr. Phil Lester 19, Professor in Ecology and Entomology at Victoria University in Wellington (Australia), PhD from Queen’s University, MSc from the University of Otago, “Insectageddon: A Global Crisis of Insect Extinction and Population Decline”, 2/26/2019, https://www.stuff.co.nz/science/110701381/insectageddon-a-global-crisis-of-insect-extinction-and-population-decline

This insectageddon is catastrophic. It's worth quoting the review here: "The pace of modern insect extinctions surpasses that of vertebrates by a large margin … it is evident that we are witnessing the largest extinction event on Earth since the late Permian and Cretaceous periods. Because insects constitute the world's most abundant and speciose​ animal group and provide critical services within ecosystems, such [an] event cannot be ignored and should prompt decisive action to avert a catastrophic collapse of nature's ecosystems."

This isn't the first study or review to highlight a massive, catastrophic and ongoing extinction of our insects. Previous insectageddon studies have been published, with supporting media coverage and statements from other scientists ("if we lose the insects, then everything is going to collapse"). But then little else happens.

#### Specifically, pesticides wreck earthworms---extinction

Robert J. Burrowes 20, Founder of the Global Nonviolence Network, Former Honorary State Secretary of The Royal Life Saving Society, Researcher and Environmental Activist, Writer for LA Progressive, Author of “Why Violence?”, “Human Extinction Now Imminent and Inevitable? A Report on the State of Planet Earth”, The Scoop, 1/9/2020, https://www.scoop.co.nz/stories/HL2001/S00027/human-extinction-now-imminent-and-inevitable.htm

17. Highlighting the unheralded biodiversity crisis on Earth, as a result of habitat destruction and degradation as well as a multitude of other threats, 73,000 species of life (plants, birds, animals, fish, amphibians, insects, reptiles and microbes) on Earth were driven to extinction with the worldwide loss of many of these species – and certainly including insects, birds, animals and fish – now at catastrophic levels. Tragically, many additional species are now trapped in a feedback loop which will inevitably precipitate their extinction as well because of the way in which ‘co-extinctions’, ‘localized extinctions’ and ‘extinction cascades’ work once initiated and as has already occurred in almost all ecosystem contexts. See the (so far) five-part series ‘Our Vanishing World’. Have you seen a flock of birds of any size recently? A butterfly?

18. Separately from global species extinctions, Earth continued to experience ‘a huge episode of population declines and extirpations, which will have negative cascading consequences on ecosystem functioning and services vital to sustaining civilization. We describe this as a “biological annihilation” to highlight the current magnitude of Earth’s ongoing sixth major extinction event.’ Moreover, local population extinctions ‘are orders of magnitude more frequent than species extinctions. Population extinctions, however, are a prelude to species extinctions, so Earth’s sixth mass extinction episode has proceeded further than most assume.’ See ‘Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines’ and ‘Our Vanishing World: Wildlife’.

19. Wildlife trafficking, worth up to $20 billion in 2019, is pushing many endangered species to the brink of extinction. Illegal wildlife products include jewelry, traditional medicine, clothing, furniture, and souvenirs, as well as some exotic pets, most of which are sold to unaware/unconcerned consumers in the West although China is heavily implicated too. See, for example, Stop Wildlife Trafficking.

20. 16,000,000 acres of pristine rainforest were cut or burnt down for purposes such as the following: acquiring timbers used in construction, clearing land to establish cattle farms so that many people can eat cheap hamburgers, clearing land to establish palm oil plantations so that many people can eat processed (including junk) foods based on this oil, clearing land to establish palm oil and soybean plantations so that some people can delude themselves that they are using a ‘green biofuel’ in their car (when, in fact, these fuels generate a far greater carbon footprint than fossil fuels), mining (much of it illegal) for a variety of minerals (such as gold, silver, copper, coltan, cassiterite and diamonds), and logging to produce woodchips so that some people can buy cheap paper, including cheap toilet paper. One outcome of this destruction is that 40,000 tropical tree species are now threatened with extinction. See ‘Our Vanishing World: Rainforests’, ‘Measuring the Daily Destruction of the World’s Rainforests’, ‘Estimating the global conservation status of more than 15,000 Amazonian tree species’ and ‘Half of Amazon Tree Species Face Extinction’.

Another outcome is that ‘the precious Amazon is teetering on the edge of functional destruction and, with it, so are we’. How long do we have? ‘The tipping point is here, it is now.’ Professor Thomas E. Lovejoy and his fellow researcher Carlos Nobre elaborate this point: ‘Bluntly put, the Amazon not only cannot withstand further deforestation but also now requires rebuilding as the underpinning base of the hydrological cycle if the Amazon is to continue to serve as a flywheel of continental climate for the planet and an essential part of the global carbon cycle.’ See ‘Amazon Tipping Point: Last Chance for Action’.

21. Vast quantities of soil were washed away as we destroyed the rainforests, and enormous quantities of both inorganic constituents (such as heavy metals like cadmium, chromium, lead, mercury, nickel and zinc) and organic pollutants (particularly synthetic chemicals in the form of fertilizers, pesticides and herbicides) were dumped into the soil as well, thus reducing its nutrients and killing the microbes and earthworms within it. We also contaminated enormous quantities of soil with radioactive waste. See Soil-net, ‘Glyphosate effects on soil rhizosphere-associated bacterial communities’ and ‘Disposing of Nuclear Waste is a Challenge for Humanity’.

To briefly elaborate the evidence in relation to earthworms: Given ‘recent reports of critical declines of microbes, plants, insects and other invertebrates, birds and other vertebrates, the situation pertaining to neglected earthworms’ was evaluated in an extensive investigation recently undertaken by Robert J. Blakemore. His research demonstrated an 83.3 percent decline in earthworms in agrichemical farms – that is, those that use pesticides, herbicides and synthetic fertilizers – compared with farms utilizing organic methods. Why? Because ‘it is impossible to replace or artificially engineer the myriad beneficial processes and services freely provided by earthworms’ which includes extensive burrows in pastures enriched with soil organic matter that allow ingress of air & water and provide living space for other soil organisms. Moreover, given that ecological services overall have been given a median value of US$135 trillion per year, which is almost double the global economic GDP of around $75 trillion – see ‘Changes in the global value of ecosystem services’ and ‘Valuing nature and the hidden costs of biodiversity loss’ – Blakemore reaches an obvious conclusion: ‘Persistence with failing chemical agriculture makes neither ecological nor economic sense.’ See ‘Critical Decline of Earthworms from Organic Origins under Intensive, Humic SOM-Depleting Agriculture’.

Given that this multifaceted destruction of the soil fundamentally threatens the global grain supply, when the ability to grow, store and distribute grains at scale is a defining element of civilization, as Professor Guy McPherson eloquently explains it: ‘A significant decline in grain harvest will surely drive this version of civilization to the abyss and beyond.’ See ‘Seven Distinct Paths to Loss of Habitat for Humans’.

### Specific Biod---Insects---AT: Defense

#### Insects underpin food chains---extinction

Robert Hunziker 18, MA in Economic History from DePaul University, environmental journalist for over fifty publications, 3/27/18, “Insect Decimation Upstages Global Warming,” https://www.transcend.org/tms/2018/04/insect-decimation-upstages-global-warming/

Everybody’s heard about global warming. It is one of the most advertised existential events of all time. Who isn’t aware? However, there’s a new kid on the block. An alarming loss of insects will likely take down humanity before global warming hits maximum velocity.

For the immediate future, the Paris Accord is riding the wrong horse, as global warming is a long-term project compared to the insect catastrophe happening right now! Where else is found 40% to 90% species devastation?

The worldwide loss of insects is simply staggering with some reports of 75% up to 90%, happening much faster than the paleoclimate record rate of the past five major extinction events. It is possible that some insect species may already be close to total extinction!

It’s established that species evolve and then go extinct over thousands and millions of years as part of nature’s course, but the current rate of devastation is simply “off the charts, and downright scary.”

Without any doubt, it is difficult to imagine how humanity survives without insects, which are dropping dead in bunches right before our eyes. For proof, how many insect splats do people clean off windshields nowadays? Not many…. How many fireflies do children chase at night? Not many….

Several naturalists and environmental writers believe the massive loss of insects has everything to do with three generations of industrialized farming and the vast tide of poisons pouring over the landscape year-after-year, especially since the end of WWII. Ours is the first-ever pesticide-based agricultural society. Dreadfully, it’s an experiment that is going dead wrong… all of a sudden!

Insects are basic to thousands of food chains; for example, the disappearance of Britain’s farmland birds by over 50% in 40 years. Additionally, North America and Europe species of birds like larks, swallows, and swifts that feast on flying insects have plummeted.

But, these are only a few of many, many recorded examples of massive numbers of wildlife dropping dead right before our eyes.

Significantly, insects are the primary source for ecosystem creation and support. The world literally crumbles apart without mischievous burrowing, forming new soil, aerating soil, pollinating food crops, etc. Nutrition for humans happens because insects pollinate.

#### Extinction

George Monbiot 17, Visiting Professor of Planning at Oxford Brookes University, Columnist for The Guardian, Held Visiting Fellowships or Professorships at the Universities of Oxford (Environmental Policy), Bristol (Philosophy), Keele (Politics) and East London (Environmental Science), Awarded an Honorary Doctorate by the University of Essex and an Honorary Fellowship by Cardiff University, “Insectageddon”, 10/23/2017, https://www.monbiot.com/2017/10/23/insectageddon/

Insects, of course, are critical to the survival of the rest of the living world. Knowing what we now know, there is nothing surprising about the calamitous decline of insect-eating birds. Those flying insects – not just bees and hoverflies but species of many different families – are the pollinators without which a vast tract of the plant kingdom, both wild and cultivated, cannot survive. The wonders of the living planet are vanishing before our eyes.

### Specific Biod---Overpopulation---2NC

#### Growth causes existential overshoot through overpopulation

Washington et al. 20, Haydn Washington, PANGEA Research Centre, Biological, Earth and Environmental Sciences, The University of New South Wales; Ian Lowe, Emeritus Professor of Science, Technology and Society, Room 2.19A, Science 2 (N34), Griffith University; Helen Kopnina, International Business Management Studies, Hague University of Applied Science, Johanna Westerdijkplein, “Why Do Society and Academia Ignore the ‘Scientists Warning to Humanity’ On Population?,” Journal of Futures Studies, vol. 25, no. 1, September 2020, pp. 93–106

We discuss here the tendency in academia to avoid the topics of overpopulation, overconsumption and the endless growth economy. However, these are the three key drivers of unsustainability (Washington, 2015; Rees, 2019). Ignoring them is irrational, not in humanity’s best interests, nor those of the amazing diversity of life we share this planet with. Other key science documents have reached the same conclusion regarding the drivers of unsustainability. The IPCC ‘Climate Change 2014’ Synthesis report (IPCC, 2014, p. 5) noted:

Globally, economic and population growth continued to be the most important drivers of increases in CO2 emissions from fossil fuel combustion.

The IPBES (2019) extinction report similarly notes: ‘Key indirect drivers include increased population and per capita consumption’ and also stated:

… a key element of more sustainable future policies is the evolution of global financial and economic systems to build a global sustainable economy, steering away from the current limited paradigm of economic growth.

Despite these reports accepting that overpopulation, overconsumption and the growth economy are key problems for society, there is remarkably little discussion about this in society or academia. It seems to be ‘taboo’ politically to question population growth, increasing consumption or the growth economy. Collectively, the public, governments and much of academia have been shying away from these issues for decades (Cafaro & Crist, 2012; Kopnina & Washington, 2016).

Environmental Data Show the Unsustainability of Human Overpopulation

Unsustainable population growth pushes the world beyond its carrying capacity (Catton, 1982), being the number of people an area can support sustainably and indefinitely. The world is finite, and we know that human numbers have grown exponentially so that they are now far larger than ever before in history (see Fig. 1). Our global population is more than 7.7 billion people. Despite declining global Total Fertility Rates (TFRs), population momentum is projected to cause global population to rise to 9.8 billion by 2050 and 11.2 billion by 2100 (UNDESA, 2017). The idea sometimes put forward that the population explosion is ‘over’ (often stated by the media and by some scholars) is clearly mistaken (as discussed by Campbell, 2012). However, it is also worth pointing out that some biologists challenge the UNDESA (2017) projections, arguing that future population may well be even larger than that projected (Gerland et al., 2014; Collins & Page, 2019). The full ramifications of overpopulation are well shown in the ‘Human Overpopulation Atlas’ by Abegao (2018).

The world is in ecological overshoot, with massive extinction underway (IPBES, 2019), as shown by all environmental indicators. This is as a result of our current global population of 7.7 billion people. Adding another 2.1 billion by 2050, and 3.5 by 2100, would cause extensive impact, major clearing of native vegetation (to produce food), major escalation of greenhouse gas production, major ecosystem collapse, and an even greater mass extinction (Crist, Mora, & Engelman, 2017). The key problem is that the world is overpopulated in terms of what is ecologically sustainable. This is true globally, as well as for the many countries that have exceeded ecological limits. This is clearly shown by the Global Ecological Footprint of 1.7 Earths (GFN, 2019), by the Living Planet Index (WWF, 2018) having declined by 60% since 1970, and by an extinction rate 10,000 times the natural rate in the fossil record (Chivian & Bernstein, 2008). One million species (at least) are now threatened by extinction (IPBES, 2019). Biodiversity experts such as E.O. Wilson (2003) suggest we could lose half (or even two thirds, Raven, Chase, & Pires, 2011) of the world’s species by the year 2100 (or possibly earlier, Chivian & Bernstein, 2008). A key contribution to this is an increasing human population.

Table

Description automatically generated

In 1968 Paul Ehrlich published ‘The Population Bomb’, which alerted the world to the dangers of exponentially growing population. He was later part of coining the entity (Ehrlich, Ehrlich, & Holdren, 1977):

Environmental Impact = Population x Affluence x Technology

Or ‘I = PAT’. Our impact on the Earth is thus the number of people times their affluence (per capita consumption of resources) times the technology we use (Washington, 2013). We accept that historically most of the impact from pollution and carbon emissions has come from the consumers in the developed world (Monbiot, 2009). However, the developing world is rapidly catching up. If this is done using traditional carbon-polluting industry (as it mostly still is), then the result will be steeply accelerating global carbon emissions, resource consumption, and increasing pollution. Indeed, this is already happening. The technology used to ‘catch up’ will thus be a critical factor, as will the question of whether the developing world seeks to catch up to the incredibly wasteful American level. However, improving technology, or curbing affluence, can only reduce our impact so far. The sheer number of consumers matters as much as the fact that many are now consuming more (Washington, 2015). A big population has a big impact, especially as the developing world expands its economy. Despite a 30% increase in resource efficiency, global resource use has expanded by 50% over 30 years (Flavin, 2010). This is mainly due to the increasing affluence of the large populations in the developing world. This is why China is now the world’s biggest carbon polluter, while India now ranks third (after the US at number two) (UCS, 2018). Accordingly, society needs to target all three components of I = PAT if we seek to reduce human impact: reducing population, limiting affluence and cleaning technology. These are key tasks any meaningful interpretation of ‘becoming sustainable’ should address (Washington, 2015). Ignoring any one part of I = PAT (population, affluence or technology) will constitute a major obstacle to an ecologically sustainable future.

Population exacerbates all other environmental problems (Washington, 2015). Overpopulation also means cutting more forest for farmland, over-farming land so that it erodes, killing more ‘bush meat’ (wild animals) for food, and over-fishing the rivers and seas (Washington, 2015). It means burning more fossil fuels, or clearing and burning more forest as a way of fueling ‘development’. Many scholars write of the need for a ‘smaller ecological footprint’, but as Dietz and O’Neill (2013, p. 78) point out: ‘we need smaller footprints, but we also need fewer feet’. Butler (2012) notes that both climate change and the extinction crisis are merely symptoms of ecological overshoot by an obese humanity. Gerlagh, Lupi and Galeotti (2018) note that from 1990 to 2017 the increase in GHG emissions is one-fourth attributable to the growth of emissions per person, whereas three-fourths are due to population growth. Rees (2019, p. 132) argues that all our environmental problems are: ‘symptoms of a singular phenomenon, gross human ecological dysfunction’. And yet despite all this, talking about overpopulation remains controversial.

### Specific Biod---Soil Erosion---2NC

#### Growth ensures soil erosion---extinction

George Monbiot 15, author and investigative reporter, “We’re treating soil like dirt. It’s a fatal mistake, as our lives depend on it,” 3/25/15, https://www.theguardian.com/commentisfree/2015/mar/25/treating-soil-like-dirt-fatal-mistake-human-life

Imagine a wonderful world, a planet on which there was no threat of climate breakdown, no loss of freshwater, no antibiotic resistance, no obesity crisis, no terrorism, no war. Surely, then, we would be out of major danger? Sorry. Even if everything else were miraculously fixed, we’re finished if we don’t address an issue considered so marginal and irrelevant that you can go for months without seeing it in a newspaper.

It’s literally and – it seems – metaphorically, beneath us. To judge by its absence from the media, most journalists consider it unworthy of consideration. But all human life depends on it. We knew this long ago, but somehow it has been forgotten. As a Sanskrit text written in about 1500BC noted: “Upon this handful of soil our survival depends. Husband it and it will grow our food, our fuel and our shelter and surround us with beauty. Abuse it and the soil will collapse and die, taking humanity with it.”

The issue hasn’t changed, but we have. Landowners around the world are now engaged in an orgy of soil destruction so intense that, according to the UN’s Food and Agriculture Organisation, the world on average has just 60 more years of growing crops. Even in Britain, which is spared the tropical downpours that so quickly strip exposed soil from the land, Farmers Weekly reports, we have “only 100 harvests left”.

To keep up with global food demand, the UN estimates, 6m hectares (14.8m acres) of new farmland will be needed every year. Instead, 12m hectares a year are lost through soil degradation. We wreck it, then move on, trashing rainforests and other precious habitats as we go. Soil is an almost magical substance, a living system that transforms the materials it encounters, making them available to plants. That handful the Vedic master showed his disciples contains more micro-organisms than all the people who have ever lived on Earth. Yet we treat it like, well, dirt.

The techniques that were supposed to feed the world threaten us with starvation. A paper just published in the journal Anthropocene analyses the undisturbed sediments in an 11th-century French lake. It reveals that the intensification of farming over the past century has increased the rate of soil erosion sixtyfold.

Another paper, by researchers in the UK, shows that soil in allotments – the small patches in towns and cities that people cultivate by hand – contains a third more organic carbon than agricultural soil and 25% more nitrogen. This is one of the reasons why allotment holders produce between four and 11 times more food per hectare than do farmers.

Whenever I mention this issue, people ask: “But surely farmers have an interest in looking after their soil?” They do, and there are many excellent cultivators who seek to keep their soil on the land. There are also some terrible farmers, often absentees, who allow contractors to rip their fields to shreds for the sake of a quick profit. Even the good ones are hampered by an economic and political system that could scarcely be better designed to frustrate them.

This is the International Year of Soils, but you wouldn’t know it. In January, the Westminster government published a new set of soil standards, marginally better than those they replaced, but wholly unmatched to the scale of the problem. There are no penalities for compromising our survival except a partial withholding of public subsidies. Yet even this pathetic guidance is considered intolerable by the National Farmers’ Union, which greeted them with bitter complaints. Sometimes the NFU seems to me to exist to champion bad practice and block any possibility of positive change.

Few sights are as gruesome as the glee with which the NFU celebrated the death last year of the European soil framework directive, the only measure with the potential to arrest our soil-erosion crisis. The NFU, supported by successive British governments, fought for eight years to destroy it, then crowed like a shedful of cockerels when it won. Looking back on this episode, we will see it as a parable of our times.

Soon after that, the business minister, Matthew Hancock, announced that he was putting “business in charge of driving reform”: trade associations would be able “to review enforcement of regulation in their sectors.” The NFU was one the first two bodies granted this privilege. Hancock explained that this “is all part of our unambiguously pro-business agenda to increase the financial security of the British people.” But it doesn’t increase our security, financial or otherwise. It undermines it.

The government’s deregulation bill, which has now almost completed its passage through parliament, will force regulators – including those charged with protecting the fabric of the land – to “have regard to the desirability of promoting economic growth”. But short-term growth at the expense of public protection compromises long-term survival. This “unambiguously pro-business agenda” is deregulating us to death.

There’s no longer even an appetite for studying the problem. Just one university – Aberdeen – now offers a degree in soil science. All the rest have been closed down.

This is what topples civilisations. War and pestilence might kill large numbers of people, but in most cases the population recovers. But lose the soil and everything goes with it.

Now, globalisation ensures that this disaster is reproduced everywhere. In its early stages, globalisation enhances resilience: people are no longer dependent on the vagaries of local production. But as it proceeds, spreading the same destructive processes to all corners of the Earth, it undermines resilience, as it threatens to bring down systems everywhere.

Almost all other issues are superficial by comparison. What appear to be great crises are slight and evanescent when held up against the steady trickling away of our subsistence.

### JG Solves---I/L---Econ Provisioning

#### Using a degrowth JG as a tool for economic provisioning unlocks the democratization of economic activity and resource distribution.

Christopher Olk et al. 22, Christopher Olk is affiliated with the Otto-Suhr Institute for Political Science, Center for International and Comparative Political Economy at the Free University of Berlin; Colleen Schneider is associated with the Institute for Ecological Economics at the Vienna University of Economics and Business; Jason Hickel is linked to both the Institute for Environmental Science and Technology, Department of Anthropology at the Autonomous University of Barcelona, and the International Inequalities Institute at the London School of Economics and Political Science, “How to Pay for Saving the World: Modern Monetary Theory for a Degrowth Transition,” 4172005, 07/25/2022, Social Science Research Network, doi:10.2139/ssrn.4172005

4.4. The job guarantee

As long as employment is necessary for people to meet their basic needs, it is necessary to mitigate chronic unemployment and to be able to achieve this in a low- or non-growing economy. Degrowth seeks to free people from the threat of unemployment, and thereby overcome the central role that wage work plays in society more generally (e.g. Parrique, 2019).

Mainstream economics assumes income distribution (among labor, and between labor and capital) is determined by technical aspects of production, and thus the only way to alleviate poverty is to grow GDP. If instead we realize, as degrowth scholarship argues, that the distribution between incomes is socially and institutionally conditioned, we can consider other methods to affect income distribution that are not predicated on growth (Minsky, 1973). The job guarantee is such a method.

MMTists have long laid the groundwork for a well-developed job guarantee - a “permanent, federally funded, and locally administered program that supplies voluntary employment opportunities on demand for all who are ready and willing to work at a living wage” (Wray et al., 2018, p. 35). Jobs follow national guidelines (around, for example, inclusion, labor standards and sustainability), while decisions on specific work are made at the local level through participative democratic processes. The federal government is the only institution that can divorce the profitability of hiring from the decision to hire. Social exclusion is addressed by providing a living wage for the “least employable” – those least likely to gain employment through top-down aggregate pump-priming of the economy (Tcherneva, 2018, 2020; Wray, 1986).

As a backstop for guaranteed public employment, a job guarantee also sets a benchmark of labor standards for the private industry to match – including wages, benefits, working hours, and structures of participation and decision-making in the workplace. Providing a floor to wage rates and a guarantee of labor income creates a check on increasing inequality and can help to reduce private debt levels, both of which become even more important in a nongrowing economy.

A job guarantee is a powerful fiscal policy tool that can provide a measure of stability and needs satisfaction, especially during economic contraction. In response to the economic crisis of 2001, Argentina ran a limited federal job guarantee program which provided necessary services to largely poor communities. The vast majority of workers came from the bottom 20% of income distribution and had at most a high school level education. Women accounted for nearly 75% of participants (Tcherneva & Wray, 2005). “The unemployed themselves initiated, organized, and staffed projects in their communities", including child or elderly care, health program support, community and school kitchens and recycling programs (Tcherneva, 2012, p. 15). The program challenged gendered stereotypes about what is productive and unproductive work, and who is employable or unemployable.

A job guarantee program is often promoted as a driver of economic growth. Existing literature on the potential for a ‘green’ job guarantee has focused on the potential to shift labor away from extractive industries and toward renewables, and as a tool to increase worker and union support for a green transition. While these are important points, a 'Degrowth Job Guarantee' can and must go further (Parrique, 2018; Schneider, 2021; Unti, 2018). In its more expansive imaginary, a job guarantee focuses on social provisioning, rather than profit. Labor is operationalized as a public good to serve social and environmental aims through the build-out and maintenance of public provisioning systems. In addition to localizing systems of production and distribution, the job guarantee locally embeds value creation, as participants decide what to value, and then generate that value.

This has the potential to drive structural change in the labor market away from material and energy intensive sectors, and toward labor-intensive sectors that are less “productive” (Hardt et al., 2020), particularly those oriented around care and repair (Last, 2021). For instance, a shift to organic agriculture, the retrofitting of buildings, or the restoring of ecosystems all tend to be labor-intensive. Further, work standards can be used to establish working time reductions, as promoted by degrowth advocates. Thus, shifting the orientation of work through a job guarantee can reduce biophysical throughput while increasing employment. This is a powerful counter to the false opposition of ‘jobs vs environment’ and provides a path for a genuinely ‘green’ job transition.

The job guarantee outlined here is a paradigmatic “non-reformist reform”. It empowers marginalized groups, while demonstrating the feasibility of transcending a market-based organization of work. Critically for degrowth, the job guarantee eliminates one of the strongest growth imperatives, while being a relatively popular policy (Tcherneva, 2018) that has the capacity to change the social prestige now associated with wage work. At the same time, a job guarantee is clearly no panacea, and must be brought into operation with complimentary policies, including regulation on private sector production and labor.

### JG Solves---I/L---Political Coalitions

#### JG removes political impediments to democratically planned degrowth and welfare policies.

Blake Alcott 13, B.A. in philosophy from Connecticut Wesleyan in 1968, spent a year in the Department of Land Economy at the University of Cambridge getting an Mphil in environmental policy, PhD from the Universtiy of East Anglia on the topic of sustainability strategies, “Should Degrowth Embrace the Job Guarantee?,” Journal of Cleaner Production, vol. 38, 01/01/2013, pp. 56–60

2. Introduction

In environmentally over-developed countries needing to degrow, institutions are such that recession increases unemployment. To make a smaller economy more socially sustainable, as well as to make the degrowth project more attractive to voters, the problem of potentially large-scale joblessness therefore deserves attention. Of course the goal of full employment is a worthy one even ‘in the best of times’ – in a growing economy – and the solution here singled out has indeed a respectable pedigree among left-wing critics of the mixed economy: the Job Guarantee (JG).

This essay – not a full-length academic work but rather a piece of advocacy – defines employment conventionally as work for which payment is received for goods and services provided. However, the unemployment problem is not the income problem and I assume that society provides financial assistance to the poorest or even that a guaranteed income (GI) is in place. Those who opt against paid work are free to ‘work’ creatively for themselves or others. Rather, the focus is entirely on the individual and social values of producing and earning, socially embedded and with some sense of individual achievement and contributing to society (Karst, 1997, pp. 532–543).

That joblessness is distressing for many people is attested not only by the underrated method of introspection but by empirical meta-analyses (Veenhoven, 1994, Murphy and Athanasou, 1999) and happiness studies (Argyle, 2001). The balance between work and free time gets disturbed, one is a burden on society, and feelings of uselessness arise. Social stresses range from sub-lower-class exclusion to higher alcohol consumption (Wray, 2007), perhaps epitomised by Karst’s observation that “Shrinking employment opportunity at any level is a seedbed for racial and ethnic scapegoating” (1997, p. 529).

I am controversially urging degrowth research to take people the way they are, whatever sea changes in attitudes towards ‘work’ may be worth pursuing, and whatever the mixture of socialism and capitalism turns out to be. I believe we should start with the values and institutions of our given societies even if many in the degrowth movement find them pathological. Firstly, these are the voters we must convince, and secondly, the number of years remaining for a managed, humane transition to a smaller economy preclude waiting until deeper attitudes have been changed. In a world where ‘the economy’ is virtually synonymous with ‘jobs’, how can degrowth present itself as a job-killer?1

A final obvious caveat: JG cannot causally help shrink the materially rich economies; this requires policies addressing high material and energy throughput itself, be they resource caps or taxes, technical changes in equipment and infrastructure, fewer goods demanded by greener consumers, or population reduction. Sometimes working time reduction is seen as a means of preventing the economy from exceeding sustainable scale (Spangenberg, 2010), but this is not relevant to JG. The employment challenge is instead how to distribute an already limited amount of paid work justly.

3. What is the Job Guarantee?

Article 23.1 of the Universal Declaration of Human Rights states: “Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.” (UN, 1948, Shklar, 1991) A guarantee means the right to paid work, no longer contingent on the growth rate and employer-employee details of a given economy. An unemployed work force would for instance no longer be an instrument serving either structural flexibility or low interest rates. Job guarantor is the state or ‘employer of last resort’ (ELR).2

The type of goods and services produced by ‘guaranteed’ jobs is not restricted to public goods, presently unpaid services or ‘green’ infrastructure. Whether the state would produce in presently private economic branches would have to be negotiated with workers and businesses in these fields, but some degree of socialisation of production might result. Concerning wage rates the only assumption is that the wage, with or without GI, is at least a socially-defined minimum (Wray, 2007, pp. 10, 18) – superceding minimum-wage laws and countering fears of inadequate wages expressed by Tinbergen (1956, p. 192) and Sawyer (2005, p. 256). Otherwise, contracts would be standard, there being for instance no assumption that the ELR is a ‘soft touch’ – the “freedom to fire” (Gordon, 1997, p. 832) should be incorporated, especially since financial support for the non-working is assumed. A considerable literature treats these three issues as well as inflationary danger and anti-cyclical fiscal policy (e.g. Mitchell, 1998, Sawyer, 2003, Sawyer, 2005, Mitchell and Wray, 2005, Wray, 2007, Harvey, 2008).

A right, as a strong claim on society, can only be something the honouring of which can cost something. Think of basic education, criminal justice, national defence, the amenties of public space and basic health care: nobody expects these activities to ‘pay their own way’, and neither must JG. However, fretting about ‘how to finance’ JG often misses the point that the goods and services could and should generate revenue for the ELR. They could be sold on the market, or booked as public goods (benefits), perhaps including ones presently falling to voluntary and charitable efforts (Gordon, 1997, p. 831) Cost-benefit analysis of JG would book administration and physical overhead as costs covered by normal taxes, but would count on the benefits side income support payments no longer necessary (Karst, 1997, Forstater, 1998, Harvey, 2008) Yet even benefits must not be quantified: in the words of Karst, “What I value most in the state’s employment of these [mentally impaired] people is not that the parks are clean and pleasant, but that the workers are afforded the dignity of work. This is not a market calculation; rather, it is an evaluation that gives weight to the inclusion of a group of Californians in our community” (1997, p. 563).

4. Real-life attempts at JG

The United States’ experience during the 1930s with the Works Progress Administration, on which an enormous literature exists, fell short of a right to work but did offer a huge number of public-sector jobs (Harvey, 2008)Most countries of the Soviet bloc knew the right to a job, but I have no competence to describe or evaluate that experience. Since however practically all countries that today stand under the degrowth imperative function much less socialistically, comparisons must be cautious. Hopefully, though, degrowth researchers who lived in the Soviet bloc will subject JG to the hard test of its fairness over against non-JG jobholders, the prospect of a huge socialised sector, and more.

Three present-day trials, in Switzerland, India and Argentina, can be briefly mentioned. In Zürich, where I lived for 36 years, the city government offers a subsidised job to any jobless person who wants it and whose unemployment insurance payments have ceased. Obligatory for these long-term unemployed is a 4-week course to assess work capability. Some employment is by bespoke ‘social firms’ partly under state ownership and some is in the extant private sector, employers in all cases paying a part-wage. As of June 2008, 30% of people targeted by the program were working at 531 jobs delivering goods and services. It is only a few years old and is complementary to traditional policies of re-training and job placement (Zürich, 2011).

A similarly small scheme, moreover embodying only a de facto but not de jure right to work, is the UK’s alliterative ‘welfare-to-work’ program. It pays private companies such as Working Links for instance £1500 per person successfully guided back into paid work (Guardian, 2010). About 13,000 people per year over the last decade have been so placed, and one has the right to join the program. There can in such schemes be ‘leakages’ such as non-additionality, replacing current employees, and corruption (Wray, 2007, pp. 7, 14, 34).

In the Indian State of Maharastra the National Rural Employment Guarantee Act of 1965 (expanded in 2005 to include all of India) enabled for instance in 1984–1985 the hiring of 600,000 rural workers for traditional public works. A study of the program claimed it has universal support because it stems the flow of migrants to cities and furthers political peace generally and concluded: “Employment becomes a political as well as an economic issue, and the articulation of political demands becomes a means of securing a livelihood.” (Echeverri-Gent, 1988, p. 1304) Wray notes however that this scheme, like the similar Argentinian Plan Jefes de Hogar program, is open only to certain poor people, while he himself advocates universality. (2007, p. 10) A detailed evaluation of the Argentine experience is in Tcherneva and Wray (2011).

5. Other paths to full employment

Assuming a JG scheme is workable –the proof is in the pudding – one argument in its favour is that it by definition reaches its goal: it is a direct policy, its effectiveness, if you will, guaranteed. In contrast at least five indirect policies can be identified: 1) economic growth; 2) deficit or anti-cyclical spending; 3) job training and brokering; 4) working time reduction (WTR); and 5) a laissez-faire labour market.

1) Growth of production and consumption will raise the number of jobs under present mixed systems unless work-hour productivity outstrips labour supply. Neither the actual success nor the theoretical merits of this path are relevant because, in the absence of any decoupling of throughput from the quantity of goods and services, it contradicts the essence of degrowth.

2) When needed, governments can raise their borrowing, or drawdown reserves, to hire people for public tasks, deemed necessary when the jobless rate rises above some determined level. That is, a certain ‘frictional unemployment’ caused by structural change or geographical relocation of production is traditionally accepted3 – as is an even higher unemployment rate when the goal of price stability or the interests of powerful employers are simultaneously pursued. (Karst, 1997, Sawyer, 2003, Sawyer, 2005, Mitchell and Wray, 2005) See Forstater (1998) for an attempt within the JG tradition to resolve the need for full employment with the need to avoid rigidity in the labour market detrimental to economic efficiency.4 This path thus does not necessarily lead to, or even strive for, full employment, and specific programs are by nature ad hoc.

3) Most rich countries offer job training and brokering as a sort of public service, whether paid out of unemployment insurance funds or general taxes. They have at best dampened unemployment, and do not regard jobs as a right. Some of this is compatible with JG, but what JG/ELR is not is stop-gap. Small programs such as the Sheffield or Newcastle Employment Bonds in the UK, or huge ones such as the U.S. Works Progress Administration in the 1930s, are cut from a different cloth – fire-fighting instead of fire prevention; they are non-universal, temporary and usually dripping with free-market rhetoric.5

4) In degrowth research the idea of each person’s working fewer paid hours over his or her lifetime, theoretically increasing the number of employed, attracts deserved attention (Spangenberg, 2010) and accepts unemployment as a real personal and social nuisance. (nef, 2010, ONeill et al., 2010) One real application of this is the famous French 35-h week, on which an extensive literature exists. It does not specifically treat paid work as a right, yet the pure maths show that full employment must be the consequence. Like JG, many questions of program design must be tackled, but unlike JG, policing a ‘black market’ is needed. Comparing the pros and cons of the two schemes is ripe for degrowth research.

5) Although a conceptual minefield, please consider that in theory a totally libertarian, laissez-faire labour market would result in work for all due to the tried and trusted laws of supply and demand: lower price (wages) raises demand to meet supply. Minimum wages, much less somewhat higher ‘living wages’, as well as barriers to self-employment, would be abandoned. (Rothbard, 1983, pp. 21, 43; Hayek, 1984, pp. 16–19) While no purely laissez-faire economy has ever existed (except usually the world economy) there are theoretical reasons why in relatively private enterprise-oriented economies powerful economic actors, including business-friendly governments or even rival groups of workers, can restrict entry into the labour market.

6. Job policy as politics, not economics

Once the goal becomes the just distribution of working hours rather than the maximisation of their quantity, full employment has moved from the economic to the political realm. I believe this is an effective answer to the ubiquitous opinion in press, politics and academia that growth is necessary ‘for jobs’. The JG moreover locates full-employment policy at the extreme end of politics, as a right derived from psychological and historical values in most European societies which treat independence (for both men and women) and earning (as opposed to receiving) as central to social standing, distinguishing workers both from slaves and the idle rich (Shklar, 1991, pp. 85–100).

Viewing work radically as a social rather than an economic question means it is no longer necessary, for instance, to defend ‘green’ policies in terms of their employment effects – arguing based on econometric models that investment in renewable energy, equipment efficiency or public transportaion ‘creates’ more jobs than are lost in the fossil-fuel sectors. (Hueting, 2010) Environmental policy appraisals would no longer have to include not only effects on energy consumption, greenhouse gases and energy security but also on ‘employment’ (Infras, 2003). Or as Green Parties everywhere dubiously argue, there is allegedly no conflict between environmentalism and the economy.

Similarly, one group of JG advocates argues for the Buffer Stock Employment method of hiring through deficit spending: “Unemployment arises because the budget deficit is too low. It is always a macroeconomic problem.” (Mitchell, 1998, p. 553) The ‘buffer’ idea subordinates employment policy to booms and busts. On the other hand, the group’s website reports exhaustively and usefully on the political right to a job (Coffee, 2010). Sawyer likewise, while raising the key question of the differences between JG and traditional pump-priming, only marginally enters this political realm of discussion, talking moreover in terms of “cost of job loss” in terms of income and lost output rather than psychological or social stress (2003, p. 904).

An argument in favour of JG is that since it is defined legally it is directly successful, as opposed to the five alternative, indirect paths outlined above. In general, once a goal is set why don’t we first research straightforward approaches rather than indirect measures of uncertain effectiveness? The same issue arises when we weigh proposals to reduce economic scale: we can start with what works, by definition and by legal rather than economic means, such as natural-resource caps or taxes, instead of oblique approaches such as resource efficiency, ‘sustainable consumption’, population reduction or renewable technologies (Alcott, 2010).

This discussion becomes clearer, moreover, if we don’t conflate the issues of income and work. They can be mentioned in the same breath if a ‘decent’, perhaps subsistence amount of purchasing power is contingent upon a job, i.e. in the absence of ‘welfare benefits’ as in many poorer countries. The single Millennium Development Goal #1, Target #2, thus calls for “full and productive employment and decent work for all”, mainly to alleviate “extreme poverty”. JG cannot replace the welfare safety net because some people are 1) unwilling or 2) unable to work or 3) personally unsuitable as employees (Wray, 2007). Guaranteed job and guaranteed income are distinct, yet our customary way of thinking regards poverty as part and parcel of job loss.

The broad lesson is Tinbergen’s rule that at least in the first analysis the number of policy “instruments” should be equal to the number of policy “targets”, and he in fact illustrated this by means of the two targets “full employment and monetary equilibrium” (1956, pp. 55–56, 63–68). Unfortunately the advent of ‘Keynesian’ anti-cyclical spending did cause the problem that financing jobs could be inflationary, and the tendency grew to conflate just these two goals. A case of their intermingling, if not their conflation, is in fact the debate between Sawyer, 2003, Sawyer, 2005 and Mitchell and Wray (2005) over JG. The lesson for us now, though, is that being involuntarily idle poses different problems than being poor, each deserving separate policy instruments.6

7. More pros and cons

The best presentation of JG I have found offers a summary of the argument up till now:

The UN World Summit in 2005 and the ECOSOC Ministerial Declaration of 2006 stressed… that employment can no longer be considered a derivative of economic policies… An ELR is a direct job creation programme that provides employment at a basic wage for those who cannot otherwise find work. It is not meant to be an emergency programme or a substitute for private employment, but rather a permanent complement to private sector employment… No other program can guarantee access to jobs at decent wages (Wray, 2007, pp. iv, 1).

He rejects Keynesian pump-priming and covers issues like potential conflicts with labour unions, the possible stigmatisation of ELR jobs, decentralised administration and earmarking the program to ‘good’ public works.7

Several additional arguments for JG can be culled from the literature. In its role as employer society would gain increased say over the type of goods and services delivered. A high demand for JG jobs might bring socialisation of some recently privatised public services such as post offices or railroads. Job security would remove fear of job loss in the same sense that compulsory pension schemes offer a relaxed view of old age. Greater self-confidence in normal jobs means one could more easily quit obnoxious employment and/or employers (Mitchell, 1998, p. 551).

In a challenge to the proposals of Wray and Mitchell, Sawyer argues for traditional or “mainline… public-sector employment programs” when “private sector demand is inadequate to generate [high] levels of employment.” (2003, p. 882; 2005, p 257) Jobs are thus for him not a right; programs can come and go. In his words, JG has at least seven major weaknesses:

1) Are there enough jobs, enough things to do, suitable for Job-Guarantee jobs?

2) Do such jobs match the skills of the unemployed – or would the job-takers be overqualified and thus ‘underemployed’?

3) Could jobs be offered in the places where the unemployment is?

4) Are the types of work really of public value, i.e. would they be productive enough in the usual sense to warrant their cost? Would they prolong ‘structural’ obsolescence?

5) What effect would low ELR wages have on similar jobs in the private sector?

6) What becomes of capital investments and administrative staff when, in boom times, such jobs are not in demand?

7) What would a JG program cost? (2003, pp. 882, 884, 891, 894)

Mitchell and Wray (2005) replied to these objections, eliciting in turn a response from Sawyer (2005), followed up by Wray’s manifesto for the ILO (2007). I find these criticisms by Sawyer salient,8 but dealing with this degree of detail is beyond the scope of both this paper and my expertise. A few political comments might nevertheless be worthwhile.

All three authors write of a “buffer stock” of labour, close to the related “industrial reserve army”, concepts with histories that seem unnecessary for this discussion. JG’s insistence on the right to work is after all designed to counter exactly these dangers of disciplining workers by fear of unemployment. Also, should labour productivity fall as a result of extreme job security, degrowth should to some extent be able to live with this. On the other hand the effect of JG on wages of similar height in the non-JG sector seems a serious question, perhaps answerable only by experience. Finally, there seems no good answer to the fear that JG jobs would carry low social prestige –a stigma – except that being on the dole is also stigmatised.

Open questions, if not criticisms, concern JG’s relation to the “maintenance economy” which cares for both the natural world and our social relationships and “where the ‘wage’ of the work is its very product” (Jochimsen and Knoblauch, 1997, p. 109; also Karst, 1997, pp. 562–569; nef, 2010, p. 16). Also needing attention are gender differences in perceptions of ‘work’, including the commodification of (traditionally female) house and voluntary work and the general societal preconditions for conventional paid work. (see Mellor, 1997, pp. 131–132, 134–137) Finally, where does the clearly socialist JG stand in relation to minority degrowth thought advocating action less reliant on national government and that rubs shoulders with a more localist anarco-libertarian tradition (Bookchin, 1991, pp. 54–62, 82–86)? Perhaps JG or other institutions protecting social rights would be better at sub-national level, say in communities between 200 thousand and 2 million people.

8. Conclusions

This paper is a tool for further research in three ways:

1. It gives a working knowledge of the Job Guarantee – a definition and its place in relation to other policies with the same aim.

2. It identifies important theoretical literature and some cases where JG has been practiced.

3. It treats full employment as an example of an area deserving separate conceptualisation, namely the social marketing of degrowth – how to increase its acceptance among voters. We are after all always faced with the threat: economic growth, or else!

Work is both fun and irksome, good and bad, wish and duty. Its social psychology includes identification with a skill, a relatively broad social network and assuming responsibility for one’s sustenance. It seems at most a half-truth, therefore, to say that what we ‘really’ want is the wage, not the work (Shklar, 1991, pp. 91–93).

Since economic shrinkage means less resource depletion and pollution, it in turn means lower affluence at any given population level. Social peace and sustainability are thereby threatened. In decoupling jobs from economic growth the Job Guarantee addresses, and by definition solves, one such social problem. Resistance to planned degrowth is moreover lowered when a policy is in place guaranteeing all who want to work a paid place in production.

#### Job Guarantee delinks unemployment from economic contraction. This makes it politically feasible.

Filka Sekulova et al. 13, Filka Sekulova is affiliated with the Institute of Environmental Science and Technology (ICTA) at the Universitat Autònoma de Barcelona, and with Research & Degrowth; Giorgos Kallis is also associated with the ICTA at the Universitat Autònoma de Barcelona, with Research & Degrowth, and additionally with the Catalan Institution for Research and Advanced Studies (ICREA) in Barcelona; Beatriz Rodríguez-Labajos is at the ICTA, Universitat Autònoma de Barcelona, and Research & Degrowth; and Francois Schneider is linked to the ICTA at the Universitat Autònoma de Barcelona and with Research & Degrowth, “Degrowth: From Theory to Practice,” Journal of Cleaner Production, vol. 38, 01/01/2013, pp. 1–6

2.2. Work and labour

The next round of contributions dwell on the concept of labour in the context of an approaching energetic decline. Degrowth is more than ever in a need of coherent proposals in the field of work. Employment has been frequently put forward as a major challenge to the degrowth narrative (consider the vision of degrowth as generating unemployment). The common conception of growth as an imperative for full employment, however, needs to be addressed and challenged first. The Job Guarantee (JG) mechanism, proposed by Blake Alcott, implies decoupling jobs from economic growth and fiscal policy by bringing them to the realm of political rights. Herein JG is meant as a permanent supplement to private employment that ensures job security, rather than an anti-crisis measure. Reviewing the relevant literature and some real-world experiences, the author discusses the different roles for guaranteed jobs and guaranteed income, stressing that price and inflation policy should not be conflated.

Here the discussion on job sharing3 as complementary to job guarantee can be considered relevant. While the first may be difficult to apply to all sectors (not all jobs are easily shareable), a job guarantee mechanism might be pricy and characterized by high administrative cost (in terms of matching skills with placements). Work-sharing, on the other hand, has a smaller financial burden for it implies salary-sharing and the introduction of a fixed ratio between the maximum and minimum salary levels. Job-sharing can also be seen as a particular application of the job-guarantee mechanism.

Guaranteed job security could well be associated with a fall in the productivity of labour, Alcott admits, which need not be problematic considering the social character of work, being both a wish and a duty. This is a central discussion in our next contribution. Quoting recent studies which demonstrate a shift in preferences for having more time for leisure than for consumption, the position paper by Jorgen Norgard makes a plea for a targeted reduction in labour productivity and work-sharing in both the professional and “amateur” economy. The latter he defines as unpaid, voluntary and driven by personal motivation. The proposal entails moving production and working time away from capital-intensive professional sectors to the labour-intensive and high social value amateur economy as a way to secure employment.

Increasing the share of free time spent on leisure and ‘amateur’ activities could function well as long as their energy intensity is kept low. Furthermore while reducing labour productivity might be relevant for degrowth, increasing the share of work performed in the amateur economy can have two opposite effects. Spending more time on a particular task in a less resource-intensive way could be mundane and unattractive. On the other hand, if labour becomes less productive in physical output, but ‘more productive’ in meaningfulness, conviviality and autonomy, the net effect of the change could be positive for well-being and energy savings, especially considering that production in absolute terms would decrease with degrowth. Blake Alcott's position paper on the pros and cons of job guarantee mechanism can be considered an input to such a transition.

The article by D'Alisa and Cattaneo complements the contributions on work stressing its social character and elaborating its definition. Their research emphasises the importance of household activities to maintain the quality of life and of unpaid work (UW), which according to feminist scholars remains unrecognised and undervalued. The authors show that the share of women in the total sum of work (paid and unpaid) is still disproportionally large. The logic of care work in non-market contexts, D'Alisa and Cattaneo comment, is not based on the rational objective of maximizing personal benefits, and must therefore be understood and analysed in an anti-utilitarian perspective which might even question its monetization.

The contribution also demonstrates that the intensity of energy use in household activities is several orders of magnitude lower than the paid-sector delivery of the same services, especially in government and caring services. The lower exosomatic metabolic rate of services from UW in relation to those provided by the labour market is demonstrated quantitatively. Considering the increasing energy demand associated with the growing number of single households, the article also questions the marketing dream of buying “convenience consumption” such as microwaves ovens, washers and driers, food processors, disposable napkins and purchasing childcare to reduce the time for UW. Co-housing and renovations which create shareable space and appliances are some of the possible ways the authors recommend for bringing energetic demand down (Lietaert, 2010).

The evidence and discussion presented by D'Alisa and Cattaneo implies that an energy crisis might not be impossible to overcome in a non-formal, or household work, perspective. On the one hand, more people could shift towards working in households, understood as small informal communities or social enterprises. On the other hand, the nature of labour might change: when performed in the ‘informal sector’ work could become more convivial, more self-managed, and thus more appealing. The proposal is closely related to the plea for more “Cinderella economy” of Tim Jackson (2009), consisting of the currently underestimated and largely ignored informal, social and community enterprises, farmers' markets, community gardens and various services, which are not necessary most productive and contributing to economic growth, but certainly rich in employment/income possibilities and social value.

Finally, dealing with issues of energy and labour, Sorman and Giampietro present an innovative methodology, MUSIASEM, which facilitates an integrated, multi-scalar accounting of societal metabolism, exposing trade-offs between energy consumption, hours of human activity and economic added value. Using data from major industrialised economies Sorman and Giampietro show how cheap energy has fueled productivity growth. They argue that further economic growth is unsustainable given the exhaustion of sources with sufficiently high energy return on energy investment. While an economic downscale is inevitable, the authors are sceptical that it can come through an organized social process, or by voluntary simplicity. Institutional responses increase transaction costs, while state services depend on the same diminishing energy surplus, they argue. The best we can do as a society is to adapt to the new conditions, not in a pre-fixed, planned manner, but through a processes of flexible experimentation in the spirit of “post-normal science”. The authors argue that diminishing energy supplies would actually require an increasing amount of work, rather than a decreasing working week, as suggested by various proponents of degrowth.

In his commentary on their article, Kallis provides a detailed response to their position. Taking the literal implications of the term, one could easily perceive degrowth as a naïve idea, rooted in the call for voluntary simplicity. The degrowth proposal, however, goes much further as also suggested by the rest of the contributions in this SI. Degrowth implies a web of micro and macro level transformations, introduced in a way so that rebound effects associated with both efficiency and sufficiency measures are prevented and “debound” action encouraged (Schneider, 2010). Kallis argues that the metabolic analysis of Sorman and Giampietro illuminates interesting trade-offs between energy and work, but does not make a definite case for the impossibility of less work with less energy. He considers Sorman and Giampietro's pessimism on the possibility of an organized collective action to manage a “prosperous way down” as not grounded by evidence.

The SI contributions on the topic of work address the possible alternatives to the energy work trade-offs raised by Sorman and Giampietro. Firstly, considering that degrowth implies a simultaneous combination of a reduction of production capacities and an increase in the simplicity of serving material needs and living, it is difficult to predict which of the two effects would dominate, or otherwise how the total amount of working hours would change. Reduction of paid working hours can either come about as a result of social deliberation, or of an energy crisis leading to more austerity and a decline in the job placements associated with the production of objects which are no longer in demand. Moreover, Sorman and Giampietro consider the formal working sector only. Yet, a decrease in the number of paid working hours might imply an increase in non-formal, unpaid, low-productive working time in the household and community. In the long run an energetic decline might require more work, but certainly not more formal sector work. In a degrowth society, work is expected to become more self-managed, more care- (rather than energy) intensive, and resulting in the creation of more durable goods.

Sorman and Giampietro apply complex theory to the analysis of the present system only. Yet, we can also imagine a system of solutions that is adaptive and combining strategies in a multilevel complex way. While a solution on a single level could lead to a rebound, a combination of strategies (such as opposition, alternatives building, and research) and dimensions (financial, natural resources, infrastructure, work, institutions, etc.) can draw a sustaining and sustainable path for transformation. This does not mean the establishment and imposition of an optimal top-down track for a macro-level reduction of natural resource use. Degrowth is conceived and elaborated as subject to and a result of continuous social deliberation. Whether society is capable of revising its trend of energy consumption and market-dependency and thus to democratically auto-reconstruct itself in a multidimensional way is certainly debatable, but need not be excluded as a possibility.

3. Final remarks

The degrowth narrative has emerged as a response to the urgency of the present physical, ecological, social and economic limits in a complex society. Certainly when not upheld by the rest of society and fostered by the right institutions, individual voluntary frugality might imply sacrifices. To avoid this, the degrowth proposal needs to integrate two approaches. One requires reducing the level of social and economic complexity and the other one – managing it and influencing the societal context. The first one requires re-localization of production, reduction of intermediaries, decreasing the number of appliances and volume of goods used or consumed per household, introduction of simpler technologies, etc. The second one involves adaptive and widespread macro-level measures which respond to the existing complexity and therefore: regulation of advertising, legal facilitation of work-sharing, establishing non-tradable caps on the extraction of natural resources, replicating the “Yasuni” example4 of leaving resources underground, redirecting investment away from infrastructure in fast and car-based modes of transport to slow-mode ones, strengthening social and ecological standards.

In this context, the first round of contributions relate a little more to the strategy of reducing complexity, while the second group of papers dwells more on managing it, and creating the right institutional and social context which allows for the organic scaling up of positive experiences. One of the threads which links many of the contributions is the unexplored potential of informal work, either household, community, amateur or social-enterprise-based, in the context of declining energy supplies, striving for ‘deeper’ democracies and ‘thinner’ presence of commercial exchanges in human relations. Assuming society is capable of managing with less paid work and more meaningful unpaid work, the proposals for job guarantee and job-sharing could cancel out the high level of unemployment associated with the present level economic downturn.

### JG Solves---I/L---AT: Other Policies Key

#### Adoption of a JG is sufficient and necessary to catalyze adoption of every other aspect of the degrowth platform.

Brandon J. Unti 20, Economics Instructor, Bellevue College, “Money, Work, and Mass Extinction: Transformational Degrowth and the Job Guarantee,” University of Missouri - Kansas City, 2020, ProQuest

Catalyst, Precondition, Platform

This paper has already examined how and why calls for voluntary simplicity, frugality or downshifting may not represent viable pathways for economy-wide transition without something like a JG in place. This criticism stems from recognition that many people are currently living lives of such economic precarity that they have no choice to trade money for time. In this case, a JG (or something like it) becomes a prerequisite. Through its provision of economic security, the JG transforms voluntary simplicity into a viable, universal, and therefore scalable DG strategy. However, voluntary simplicity is not the only strategy that a JG supports. A JG can be usefully applied to the initiation, acceleration, and perpetuation of a number of DG proposals including: Reduced Hours, Re-Localization and community development, Sharing Economies, Care and decommodification.

Reduced Hours

Reducing the work week is one of the most popular proposals within the DG movement and seems to be one of the most simple and obvious ways of achieving the mutual aims of improved well-being and reduced environmental impact. If we all work fewer hours, then production and throughput decrease. With additional leisure time, people will have more time to develop relationships, engage in civil society, learn new skills, volunteer, pursue education, exercise, and enjoy life (Schor 2010, 102). Overall, the aim is to exchange traditional throughput-intensive forms satisfaction via consumption, for time-intensive forms of satisfaction via learning, socializing, community engagement, and play.

While a JG is not a necessary policy for achieving reduced hours, it may serve as a useful pathway for that goal. As proposed, a DG JG will require reduced productivity and the easiest way to achieve this is to reduce hours of work. If for example, a JG is implemented as a 30-hour workweek then even if JG workers produce as much per unit of time as their counterparts in the private sector, the JG sector still achieves reduced productivity. Assuming a JG is politically attainable, it may be easier to implement a 30-hour week within the JG, than to impose it as a nation-wide standard. Nonetheless, a 30-hour week in the JG is likely to result in pressure on private sector employers to make work-time concessions to their employees. Moreover, a shorter work week in the JG is likely to be one of the most significant non-monetary benefits of the JG that will help to retain JG workers over the cycle ensuring that the JG grows as a share of aggregate employment. In any case, if the private sector matches reduced hours this achieves the same aim of reducing overall production.

Finally, the JG will achieve a central goal of DG in terms of politicizing or re-politicizing the economy. As Alcott (2013) notes, a JG is an important step in this re-politicization. Politicizing jobs and establishing employment as a right is crucial step toward democracy and autonomy and away from heteronomy with respect to economic institutions.

Re-Localize

The localization of the economy serves the aims of DG on a number of fronts. By fostering face-to-face relationships, community, trust, cooperation, and relations of reciprocity, re-localizing economic activity helps reverse the damage done to the social fabric by the logic and values of global capital. Reducing the social and spatial distance between those interacting in relations of production and consumption serves to humanize the economy. When producers know the consumers of their products, they experience a sense of accountability. Similarly, when consumers live in proximity with producers and production, they develop an understanding of methods, environmental impacts, working conditions, etc. This means that consumers will be better situated to make informed choices, in turn, pressuring producers to comply with community standards. Perhaps the most obvious advantage of localizing production and consumption is the massive reduction of energy use and emissions associated with reduced transport.

A JG can and should be used to re-localize the economy. Administered at a community level the JG will focus on employing members of the community in ways that serve the community. This means local work, reduced commutes, and reduced energy consumption in the transportation of goods and services. As an example, the JG might undertake local food production via community farms and gardens. This will provide meaningful work, healthy food, and curtail energy use in terms of transport, processing, and refrigeration.

Another example might be JG public arts and entertainment via music, poetry readings, dance, and theater. Here again the JG fulfills multiple functions, providing meaningful-enjoyable work, fostering community, and creating opportunities for public consumption to replace high throughput private consumption. For instance, rather than everyone purchasing a television to plug-in and watch at home, community members can walk to the local theater. It should be noted that this kind of public consumption is likely harmful to the health of a capitalist economy via its impacts on aggregate demand, profits, and employment. Given capitalism, it is desirable that everyone purchases a television (and better yet a new model each year) because it helps to fuel sales and jobs. Thus, public consumption poses a threat to employment. In this case, that threat is pre-empted by a JG.

Care

Speth (2012) argues that we must create a new economy that makes sustaining people, communities, and the environment the objective of economic activity. This contrasts with the existing system which views such goals as the by-products of market success and growth. Speth notes if there is a watchword for this new economy that “watchword is caring: caring for each other, the natural world, and the future” (Speth 2012, 183).

Care is also positioned as part of the struggle for social justice and equality in the DG discourse. Care work, central to social and economic reproduction, is often unpaid, invisible, and undervalued. As non-market activity it has no money value and therefore, according to economics no value at all. This is a legacy of patriarchy, which by denying wages to a class of work traditionally reserved for women, ensures their dependence and subservience to male breadwinners (Picchio 2003). It is also a reflection economics’ “productivism” which values only the activity recorded in market transactions while ignoring all the unrecorded work which actually make market transactions possible (D'Alisa, Deriu and Demaria 2015, 63-66).

The JG can be used to increase our commitment to care, while addressing issues of equity and justice. Care work such as raising children, maintaining a household, caring for the elderly and infirm, preparing food, and serving as a companion or assistant to those in need, are precisely the kinds of activities that JG workers should perform in a DG model. By providing a wage for such work, the JG will help to break the stigma, dependence, and inequity traditionally associated with these roles. Moreover, a JG can be used to halt the destructive commodification of care work which has begun under neoliberalism.

The commodification of care work is destructive because it reduces what are deeply personal, emotional, and human relations to instrumental market transactions. Instead of parents raising their own children, a daycare center or professional baby-sitter receives a paycheck to perform the work. This changes the nature of caregiving and removes from the equation deep emotional connection. As Sandel explains, markets are not neutral conveyors of goods and services. To the contrary markets, “mark” goods and express or change our attitudes towards them. “When we decide that certain goods may be bought and sold, we decide, at least implicitly, that it is appropriate to treat them as commodities, as instruments of profit and use?” (Sandel 2012). Under a JG, parents would receive wages to raise their own children. Similarly, family members could be paid to take care of their aging parents and grandparents rather than sending them off to a nursing home.

In sum, a JG will re-localize care and build a more robust network of care-giving that relies on personal bonds and community embeddedness to ensure quality. By ensuring care workers are paid, a JG should increase the overall amount of care in absolute terms and as a share total employment. It is crucial that care work becomes a central part of a DG economy because it provides meaningful work, helps to cultivate social bonds, serves a vital need in every community and requires low levels of throughput.

Sharing

Next to reduced hours the simplest, most obvious, and direct way of achieving reduced production and consumption, is to pursue institutions that expand opportunities for sharing. Employing Boulding’s framework for welfare, sharing allows us to increase the amount of satisfaction we receive from the existing capital stock while minimizing both consumption and production. In addition to its obvious impact on throughput, sharing has tremendous potential to build and strengthen community bonds. But what exactly is meant by sharing? And if it’s so wonderful why don’t we do it now?

With the aims of DG in mind, sharing in every possible form ought to be explored. This may include co-housing, work-sharing, expansion of commons, and public goods. On a more basic level, we can look to the existing institution of the library to understand how sharing might work. Except instead of limiting the function of the library to books, it should be extended to every possible good and service. The most obvious goods for library sharing would include those that most people use only at occasionally. Tools and recreational equipment are excellent examples of sharing models that currently exist on small scales. Many cities are now home to tool libraries, where community members can borrow tools to complete a project. Similarly, many university campuses offer recreational equipment libraries, providing students and community members access to a variety of outdoor equipment on demand.

It is easy to imagine expanding networks of sharing to include many more items from computers and electronics to cars and home appliances. In every case, sharing and the use of libraries offers great potential to reduce our production, consumption, and overall demand on the planet. First, and most obviously, if instead of everyone purchasing one of everything, we simply share a smaller pool of resources, fewer items need to be produced and sold. Second, and less obviously, when all of the tools, appliances, cars, and recreational equipment we need are available from a library, there is no need to store them in our homes. This would enable people to build and live in much smaller dwellings, reducing throughput for construction, heating and cooling.

Finally, libraries bring people together. They are hubs of community engagement, culture, and the diffusion of knowledge. It is easy to see tool libraries hosting courses on safety, crafts, and home-repair, or creating bulletin boards for people seeking volunteers to help with local construction projects. Similarly, as happens around existing recreational libraries, courses are offered teaching people how to use, maintain, and repair equipment, and group outings are organized to build community around shared hobbies.

So, where does a JG fit in? As in other cases, the JG contributes to the sharing economy in a variety of ways. First and foremost a JG overcomes the problem of unemployment. A significant commitment to libraries and sharing would be devastating to a capitalist economy. While it is obviously not necessary and—in light of the ecological crisis it is downright insane— that we all buy one of everything, the consequence of not doing so is economic crisis. As Krugman notes:

“There is one very powerful argument that can be made on behalf of recent American consumerism: not that it is good for consumers, but that it has been good for producers. You see, spending may not produce happiness, but it does create jobs, and unemployment is very effective at creating misery. Better to have manic consumers American style, than depressive consumers of Japan . . . There is a strong element of rat race in America’s consumer-led boom, but those rats racing in their cages are what keeps the wheels of commerce turning. And while it will be a shame if Americans continue to compete over who can own the most toys, the worst thing of all would be if the competition comes to a sudden halt” (Krugman 1999).

So, in this sense, the JG may be viewed as a prerequisite to the wide-spread adoption of sharing. Without something like a JG in place, sharing is not a socially sustainable option.

A JG may also be used to initiate or catalyze the sharing economy and the establishment of libraries. Construction and administration of libraries will create numerous jobs. Similarly, the maintenance and upkeep of library assets will require regular employees. Once again, a JG can and should offer employment carrying out precisely this type of work. It provides meaningful work, that serves local communities, while helping to foster social bonds, and reducing levels of production and consumption.

Finally, libraries and sharing networks can and should provide universal access to the community’s collective resources thereby serving the aim of equality. Just like existing libraries nobody will be forced to use them. This means the rich can continue to dwell in their private kingdoms of private ownership. However, it also means that the least well-off in society will have access to valuable resources they would otherwise be denied.

V. Conclusion

This chapter argues that the JG can serve as a platform for the multi-dimensional themes, strategies, goals, and policies of the DG movement. The reason the JG offers potential in this regard is owing to the unique space it occupies between TD and BU pathways of transition. This unique positioning means it can overcome a basic contradiction in the DG discourse between its fundamental structuralist orientation in terms of diagnosing crises, and its simultaneous overreliance on individual agency to address them. The JG is an amphibious approach calling on the power of government to expand the space for social deliberation, community autonomy, and individual choice. Indeed, it is argued that without first initiating macro-level institutional changes, many of the BU proposals called for are not feasible, scalable, or socially sustainable.

The JG is an example of how to overcome what Boonstra & Joosse identify as “the degrowth paradox.” The paradox begins with DG’s recognition that the drivers of the ongoing social and ecological crises are traceable to the structures and imperatives of a capitalist economy: “By singling out economic growth as the cause of ecological and social misery, degrowth blames the inner workings and logic of capitalism, since economic growth is the single mechanism that holds the capitalist system together” (Boonstra and Joosse 2013, 173). The problem is this. No proposal that is compatible with capitalism will be effective. What is required is a complete break from the system. But here is a “paradox; since it is a classic sociological insight that societies never start with a blank slate” (ibid.). The question then is “how a process of degrowth can materialize within capitalism.” This chapter proposes an answer in terms of Gorz’s strategy of non-reformist reform.

The JG is not a revolutionary proposal. It was conceived as a reform to achieve full employment and thereby stabilize capitalism. However, a JG also contains in it seeds for radical transformation. The purpose of this chapter is to highlight these radical seeds and transform them from potential unintended consequences into primary policy goals. The last chapter explained how the JG might be configured as a non-reformist reform, itself providing a pathway out of capitalism. This chapter explores further how the JG can serve as platform for the diverse and growing list of DG proposals. It demonstrates that a JG is not only consistent with the core philosophical themes of DG, in many cases, it may be a prerequisite to transitional strategies envisioned by the movement.

### JG Solves---I/L---AT: Other Policies Key---Ext

#### JG creates space for degrowing via additional regulations, taxes, and consumption and energy taxes.

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4. Monetary and fiscal policies for a degrowth transition

The policies proposed by MMT and degrowth share a significant overlap. Some are intended to serve different goals in the two sets of literature, but these goals are highly complementary. For instance, reducing demand for energy may not only decrease carbon emissions, but also inflationary pressures. Figure 2 illustrates this overlap.

[FIGURE 2 OMITTED]

Both MMT and degrowth deviate from mainstream approaches by proposing targeted measures to manage sector-specific effective demand. Currently, the management of employment levels and aggregate demand falls largely upon central banks, who work through financial markets and rely on blunt tools (primarily interest rates and asset purchases) to address these issues, with socially suboptimal effects, both on a national and global level (Bernal, 2022). Fiscal policy has the capacity to operate in a more finely-tuned and equitable manner - to directly ensure employment, in a way that promotes sustainable sectors, supports regions "left behind", and directly benefits marginalized communities.

4.1. Shifting taxation from labor to wealth and resources

From the perspective of MMT, taxes amount to the ‘destruction’ of money, and thus a reduction and redistribution of effective demand. Their function is not to create revenue for the government or to “mobilize private and corporate savings” (Mastini et al., 2021), but to create macroeconomic (and ecological) space for public spending and to reshape income and wealth distribution. MMT demonstrates that the necessary reduction of demand through taxation does not necessarily have to precede the construction of sustainable provisioning systems. This is a strategic advantage, as citizens may oppose higher taxes precisely because they fear losing access to commodified need satisfiers.

The degrowth literature, in turn, does not discuss the macroeconomic effects of taxes as much as their distributional and ecological effects. This scholarship favors shifting taxation from wages to wealth, financial transactions, inheritances, and ecologically destructive consumption goods (Parrique, 2019, p. 36; Kallis et al., 2012). The moral principle of sufficiency, in and of itself, requires taxes on high incomes and high wealth (Parrique, 2019, p. 235 ff.). These taxes would also effectively reduce emissions, as the wealthiest individuals are responsible for a disproportionate share of global emissions in excess of planetary boundaries (Otto et al., 2019; Gore et al., 2021). Shifting taxation away from labor and towards the consumption of resources and energy is also an effective tool to steer demand away from ecologically destructive sectors. Consumption of specific goods can be further reduced through absolute caps or bans on advertising (Cosme et al., 2017). By reducing imports, such measures may also augment the monetary sovereignty of import-dependent countries (Bonizzi et al., 2019).

The tax schemes proposed by MMT and degrowth are complementary, but there may be tradeoffs. For instance, while high tax rates on top income earners reduce inequality, they are relatively ineffective for reducing inflation, since the rich save proportionally more of their income. The synergies and political tradeoffs between the objectives of reducing inequality, inflation, and environmental impacts warrant further research.

4.2. Credit regulations: Degrowing private finance

Understanding money as a public good, created through and backstopped by the authority of the government, has implications for the broader system of credit creation. The creation of money has been franchised (to banks) and increasingly sub-franchised (to non-bank financial institutions; see Pozsar, 2014) by currency-issuing governments (Hockett, 2019). The corresponding extension of liquidity fuels the growth of market-based finance and financial accumulation (Musthaq, 2021). Credit is preferentially allocated to the fossil fuel sector due to its perceived and historic profitability (Christophers, 2021). Instead, a targeted and democratically-embedded approach to credit regulation would serve as a compliment to public investment to both direct private finance in line with a degrowth transition, and to alleviate inflationary pressures that emerge from a planned reduction of economic activity.

Central banks do in fact have a deep toolbox at their disposal to support such an approach (Tankus, 2022). While the last two decades of the 20th century were marked by a hegemonic shift to a model of (in theory) independent and apolitical central banking, central banks through the mid 20th century had operated under explicit direction of the government to direct investment toward social purpose, using a much broader range of tools than are employed today (Elliott et al., 2013; Gabor, 2021; Levey, 2020; van ’t Klooster, 2021).

Direct qualitative credit regulation can focus on sectors (such as strict limits on credit allocation for the fossil fuel sector) or on activities (such as limiting credit for mergers and acquisitions). Disincentivizing the “bad” alongside incentivizing the “good” is a powerful tool to regulate economic demand in the face of potential inflationary pressures. Direct quantitative credit regulation is effectively a credit ceiling on bank money creation, which - as a compliment to qualitative regulation, and a job guarantee program (outlined in section 4.4) - can serve to ensure a level of demand consistent with price stability (Monnet, 2019). The commercial banking sector and endogenous money creation are not antithetical to a degrowth transition if embedded within such a structure. Beyond banks, to effectively degrow and limit the power of finance, it is critical that credit regulation be extended to the non-bank financial (i.e. shadow banking) sector.

The approach outlined here replaces the very blunt tool of interest rates with a much deeper and more effective toolbox. At the same time, a shift away from interest rates as the monetary policy instrument du jour is consistent with MMT logic of the “zero natural interest rate” (Forstater & Mosler, 2005; Fullwiler, 2020). As high interest rates on government bonds drive wealth inequality and potentially generate inflationary pressure, MMT economists propose maintaining a zero rate of interest.

In addition to credit-creating institutions, institutional cash pools (such as insurance and pension funds) play a central role in the growth of the financial system. The modern financial landscape is one of highly concentrated asset manager capitalism (Braun, 2020; Steele, 2020), buoyed by inflated aggregate asset prices which central banks have obligingly ensured through expansive quantitative easing programs. Placing qualitative and quantitative restrictions on both central bank purchases and the asset holdings of these funds would limit the power of the largest financial actors. Going beyond regulation, de-financializing cash pools is necessary to "degrow" finance. In the case of pensions funds, this would include an intentional shift (back) to pay-as-you-go schemes, supported by the development of in-kind public provisioning systems for elderly care.

### JG Solves---Framing

#### Framing issue---use a low threshold---we only need to win a transition’s more likely than a phase shift in physical limits, NOT that it’s absolutely likely

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Political and economic feasibility

Compared with technology-driven pathways, it is clear that a degrowth transition faces tremendous political barriers9,49. As Kallis et al.9 state, currently (p. 18) ‘[a]bandoning economic growth seems politically impossible’, as it implies significant changes to current capitalist socioeconomic systems in order to overcome its growth imperatives9,19,49. Degrowth, moreover, challenges deeply embedded cultures, values, mind-sets21 and power structures9,19. However, as Jewell & Cherp state, political feasibility is softer than socio-technical feasibility25, with high actor motivation potentially compensating for low action capacity and social change being complex, non-linear and essentially unpredictable50. Political feasibility further depends to a large extent on social movements formulating and pushing for the implementation of political programs, changing values, practices and cultures and building alternative institutions49,51 as well as scientists pointing the way to alternative paradigms49. Consequently, degrowth implies modifications to the strategies for change, with a stronger focus on bottom–up social movements9,19,49. As many research questions on degrowth remain open9,19 and the state of political feasibility can change with better knowledge about and awareness of alternative paradigms, strengthened social movements and a clearer understanding about transition processes49,50,51, it is even more crucial to investigate degrowth pathways.

‘Economic feasibility’ usually refers to the monetary costs of a mitigation pathway, reported as share of GDP4,24. Here, many IAMs follow a cost-minimisation approach in order to maximise economic welfare4,41, measured in GDP, by progressively implementing only the mitigation measures with the lowest marginal abatement costs. From this perspective, degrowth is often considered economically inefficient, as the GDP loss is considered a cost and when weighted with the avoided CO2 appears to be overly expensive compared to technological measures52. However, this reasoning presupposes a fictitious ‘optimal’ GDP growth path, any negative deviation from which is a priori defined as a ‘cost’41. Importantly, GDP is not a neutral construct9. Thus, one needs to ask to whom costs occur, who profits, whose contributions are in- or excluded and finally who should decide this9. So, even if this GDP loss is accepted as a ‘cost’, this reasoning compares two categories that have very different, and partly incommensurable, welfare implications. For instance, the costs of replacing a coal plant with wind turbines (a technological measure: creating jobs and reducing CO2, but using land and materials) are not directly monetarily comparable to the costs of producing, consuming as well as working less (a GDP loss: polluting less, while using less resources and potentially leading to further positive social consequences, if well managed). To have a more valid comparison between the two categories, one would need to monetise the whole variety of ecological and social impacts on different groups of people and ecosystems, which is impossible at least without strong value judgements4,9. A more suitable perspective when dealing with climate justice issues in a wellbeing context is a human needs provisioning approach16,20,53. The crucial question then becomes how, if GDP were to shrink as a result of the required reductions in material and energy use and CO2 (the degrowth hypothesis), e.g., through stringent eco-taxes and/or caps9, this GDP decrease could be made socially sustainable, i.e. safeguarding human needs and social function9,21. Here, research shows that in principle it is possible to achieve a high quality of life with substantially lower energy use and GDP9,16,17,20. As noted in the introduction, however, substantial socioeconomic changes would be necessary to avoid the effects of a recession. Moreover, the reductions and limits would need to be democratically negotiated9,21,49 and consider potential ‘sufficiency rebound effects’54 (reduced consumption by some being compensated through increases by others), e.g., by international coordination.

To summarise, as indicated by Fig. 5, the 1.5 °C degrowth scenarios have the lowest relative risk levels for socio-technical feasibility and sustainability, as they are the only scenarios relying in combination on low energy-GDP decoupling, comparably low speed and scale of renewable energy replacing fossil fuels as well as comparably low NETs and CCS deployment. When excluding any NETs and CCS deployment, the degrowth scenarios still show the lowest levels of energy-GDP decoupling as well as speed and scale of renewable energy replacing fossil fuels, compared to the ‘IPCC’ and ‘Dec-Extreme’ pathways. As a drawback, degrowth scenarios currently have comparably low socio-political feasibility and require radical social change. This conclusion holds as well for the 2 °C scenarios, albeit with less extreme differences. Here, the ‘Degrowth-NoNNE‘ scenario, with ~0% p.a. global GDP growth, is almost aligned with historical data, in stark contrast to the technology-driven scenarios without net negative emissions (see Supplementary Fig. 4).

Discussion

The results indicate that degrowth pathways exhibit the lowest relative risks for feasibility and sustainability when compared with established IPCC SR1.5 pathways using our socio-technical risk indicators. In comparison, the higher the technological reliance of the assessed mitigation pathways, the higher the risks for socio-technical feasibility and sustainability. The reverse is likely the case for socio-political feasibility, which, however, is softer than socio-technical feasibility. This result contrasts strongly with the absolute primacy of technology-driven IAM scenarios in the IPCC SR1.5. In what follows, we discuss limitations of our modelling approach and risk indicators, implications for the IAM community and further research.

Our results face several limitations. Note that we use the carbon budget for a 50% chance to stay below 1.5 °C2, which can be argued to be too low based on the precautionary principle, especially when considering that such scenarios still include a 10% chance of reaching catastrophic warming of 3 °C55. Already increasing the chance for 1.5 °C to 66% lowers the available carbon budget by 160 GtCO2, while including earth system feedbacks lowers it by an additional ~100 GtCO22. In addition, note that we do not consider CH4 and N2O emissions, for which technological mitigation is more problematic than for CO2. Including all these factors would substantially increase the mitigation challenges. Any such increase further strengthens the case for considering degrowth scenarios, since it becomes even more risky to solely rely on technology to accomplish the higher mitigation rates. Thus, complementing technology by far-reaching demand reductions through social change becomes even more necessary for 1.5 °C to remain feasible. This is especially the case when considering the softer nature of social feasibility compared with socio-technical feasibility. We nevertheless stress that feasibility is a highly complex concept that can be interpreted differently and, in the case of individual scenarios, remains at least in part subjective24. Therefore, a larger variety of indicators than ours is certainly necessary to arrive at a more complete picture of feasibility. However, we maintain that such research should explicitly consider degrowth scenarios, e.g., along the lines of the ‘Societal Transformation Scenario’ by Kuhnhenn et al.56 or the ‘SSP0’ scenario proposed by Otero et al.39. Especially in view of socio-political feasibility, we argue that not exploring them actually leads to a self-fulfilling prophecy: with research subjectively judging such scenarios as infeasible from the start, they remain marginalised in public discourse, thus inhibiting social change, thus letting them appear as even more infeasible to the scientist and so on. As McCollum et al.57 and Pye et al.58 argue, modellers have a collective responsibility to evaluate the full spectrum of future possibilities, including scenarios commonly deemed politically unlikely.

A further limitation of this study is our simplified quantitative model, which only addresses the fuel-energy-emissions nexus top–down. This enhances transparency and understanding and is suited for the purpose of this study by allowing to assess relative feasibility. Moreover, it enables modelling pathways currently excluded by the IPCC IAMs, avoiding the difficulties and complexities with modelling degrowth (see below and Methods). Nevertheless, our model neglects the monetary sector22, connections between energy and material availability and economic growth23,34 as well as the bottom–up energy and material requirements for decent living standards20. This potentially renders some scenarios infeasible, despite our efforts to qualitatively include these factors in our above treatment of feasibility. Therefore, our simplified modelling approach can only be a very first step to exploring degrowth scenarios and needs to be complemented by more complex modelling.

To our knowledge, no in-depth study examining the reasons for the omission of degrowth scenarios in mainstream IAM modelling exists (but see4). Such modelling is highly challenging, partly because a degrowth society would function differently compared to the current society. Thus, model parameters and structures based on past data could no longer be valid59. Furthermore, it would need to recognise that GDP is an inadequate indicator for societal wellbeing, at least in affluent countries. Instead, the focus needs to be oriented directly at multidimensional human needs satisfaction9,18,53. This is especially important given that many degrowth proposals include a strengthening of non-monetary work, such as care work and community engagement, as well as decommodification of economic activity towards sharing, gifting and commons9,59. This also implies revisiting the widespread, neoclassical economic optimisation approach in IAMs4,23,59. More plural economic perspectives would need to be taken into account to gain a fuller picture of socioeconomic reality22,59,60, e.g., post-Keynesian, ecological and Marxian economics. Such modelling would also need to broaden the considered portfolio of demand-side measures and behavioural changes4,61,62. At last, it is clear that the biophysical foundation of economic activity and energy efficiency rebound effects need to be considered in much greater detail8,23,27. The necessary detailed discussion of how exactly IAMs would need to change to incorporate some of these features is beyond the scope of this paper, but such discussions are already under way in the literature8,27,58,61,62 and could be further inspired by current efforts in ecological macroeconomic modelling59. Promising developments in these directions are put forward by the MEDEAS IAM modelling framework, which connects biophysical economic insights, system dynamics and input–output analysis23,34. Another recent example is the EUROGREEN model, combining post-Keynesian and ecological economics in a system dynamics stock-flow consistent framework to assess socio-ecological consequences of national degrowth and green growth scenarios22.

In light of the optimism of IAM mitigation scenarios regarding technological change3,8,27, NETs2,46 as well as the neglect of the wider ecological crisis5,6,7,39 and equity issues33,40,46, it should be a priority to explore alternative scenarios. Clearly, degrowth would not be an easy solution, but, as indicated by our results, it would substantially minimise many key risks for feasibility and sustainability compared with established, technology-driven pathways. Therefore, it should be as widely and thoroughly considered and debated as are comparably risky technology-driven pathways.

### JG Solves---AT: Backlash

#### The CP streamlines the transition by lessening well-being downsides to abandoning growth.

Tamara Krawchenko & Megan Gordon 21, Krawchenko is with the School of Public Administration & Institute for Integrated Energy Systems, University of Victoria; Gordon is with the University of Northern British Columbia, “How can we manage a just transition?,” March 2021, SSHRC, https://www.uvic.ca/hsd/publicadmin/assets/docs/just-transitions-report-sshrc-report-2021.pdf

As has been apparent under Covid 19, social security systems can be mobilised to address new needs in a time of crisis; however, these have not been commonly used as a policy mechanism to facilitate a just transition. Some examples include expanding timeframes and amounts payable to those who have lost employment through employment insurance or establishing early pension systems for specific industries (e.g., coal pensions in the US). In some countries there can be regulatory challenges to having more adaptive and targeted social security systems. Thus, reforms may be needed to ensure that social security systems can be used to support transition. Adaptable programs that permit carve-outs with flexible parameters can help provide timely support. Examples of this approach are the priority access for manufacturing workers to access training support in Ontario, or the Rural Dividend Fund in British Columbia (Government of British Columbia, 2020).

Direct funding for community level economic development supports is not common among the regions studied. One exception to this was the Community Initiatives Plan in the Bay of Plenty, New Zealand, where the regional council flowed funding directly to local governments to support community growth. While it is well acknowledged that industrial transitions not only impact the workers employed in those sectors but also in the broader community and local economy community oriented supports were often absent. There can be a presumption that workers are mobile and will move to a new place to seek employment. While this may be true for some people, it is likely not true for all. Communities are more than just a place of employment – people have often deep connections to the places where they live. Community level supports may entail support to convene and develop a new economic development strategy or support for new infrastructure or community assets. The literature on just transitions also points out the importance of community involvement in discussions about their future. Multi-level governance dialogues can help to ensure that transitions are not managed in a top-down manner, but actively involve local governments and residents. Holistic support for communities, such as improving capacity, building infrastructure, reducing industry dependence, supporting low-carbon transition, addressing social issues and addressing ideological challenges can improve the wellbeing of communities.

JOBS AND ENVIRONMENT FOCUSSED INITIATIVES ARE THE MOST COMMON

The literature on just transitions reveals three main ideas and approaches: “jobs-focused”, “environmentfocused”, or “society-focused” lenses – each of which correspond to national and regional policy instruments (Bennett, Blythe, Cisneros-Montemayor, Singh, & Sumaila, 2019; Evans & Phelan, 2016a; Goddard & Farrelly, 2018; Meadowcroft, 2009; Mertins-Kirkwood, 2018a; Newell & Mulvaney, 2013; Stevis & Felli, 2014). Jobs-focused and environment-focused strategies, polices and initiatives were most prevalent among the countries of study. Well-developed workforce and skills strategies and wide ranging climate action plans were evident. However, society-focused framing is less common. The policy documents reviewed acknowledge that a society and economy wide transformation is needed, but the policy measures to support this are poorly articulated and usually focused on addressing energy poverty. Among the regional profiles it was found that social justice language is largely absent from industrial transition policies; that is, language rooted in whole economy thinking (e.g., addressing structural inequalities, social issues, matters of race, gender, socio-economic status, etc.).

ACCOUNTABILITY MECHANISMS ARE NEEDED FOR DETERMINATIONS OF JUSTICE

How do can we assess the degree to which policy instruments and strategies adequately address justice and equity? Justice or equity can be conceived in distributional, procedural and recognitional terms (McCauley & Heffron, 2018; Newell & Mulvaney, 2013). Understanding this is fundamental to public policy because it defines the parameters for success. When it comes to sustainability transitions, distributional justice is concerned with how different groups benefit or experience impacts from the changes required; recognitional justice identifies interest groups and rights holders who may be implicated; and procedural justice is concerned with elements of governance—who is included and how (Bennett et al., 2019). See Figure 5 for a breakdown of these elements.

[FIGURE 5 OMITTED]

Elements of justice are more easily identifiable when looking at the design and quality of individual programs and policies. Our analysis did not examine individual policies in depth; however, there were clear indications as to how “just” an approach or instrument would be, based on a few fundamental considerations (particularly for responsive measures):

 Are adequate funds provided to ensure meaningful change/support?

 Are program parameters/qualifications flexible to ensure ease of access?

 Are there clear means to communicate transition and opportunities?

Accountability mechanisms could help bring these elements to light. The establishment of Just Transitions Commissioners in Scotland and Ireland is one accountability mechanism that governments could use to track, measure and report on these elements of justice. The Commissioners act in a coordinating role within and between governments and report annually. A leading practice of a policy approach is the Hapū/Iwi Resource Management Plan in the Bay of Plenty, New Zealand. The plan established legislative requirements to ensure resource management issues important to local Indigenous peoples are taken into account. The inclusion of Indigenous peoples in decision making, particularly regarding resource development, is crucial in establishing recognitional, procedural, and distributional justices.

THE SCOPE OF INTERVENTIONS ARE RELATED TO WELFARE REGIME TYPES

How governments manage just transitions relates to the role of government in those societies. EspingAnderson’s work categorising developed capitalist nations along three welfare regime types—liberal, conservative and social democratic—is useful here (Esping-Anderson, 1990). Social democratic states (i.e., Nordic countries) provide the most comprehensive benefits and services to their citizens and these are under the direct responsibility of central and local public authorities. Liberal regimes (i.e., the United States and Australia) tend to rely more on private sector provision, and in conservative regimes (e.g., France, Germany, and the Netherlands) welfare goals are met through transfer payments to families as opposed to direct provision funded out of taxation. While Esping-Anderson’s analysis focuses on the study of social transfers such as pensions and unemployment benefits, it is nevertheless a useful framework to describe the logics that underpin how the state provides benefits and to whom.

Across the countries studied it has been found that those with limited interventions tend to emphasise the role of the free market in transition processes, use deregulation to spur economic growth and employ major infrastructure projects to spur jobs creation. Examples include the United States, Ontario (Canada) and Western Finland. These places have regions where main industries are in decline, but there is no actively managed transition or efforts to reinvigorate the sector. In Incheon, Korea, the Incheon Free Economic Zone was established to reduce regulations and thus spur foreign investment in the metropolitan city as a means to reverse industrial decline. In contrast, states with actively managed transitions tend to have a larger role for government and strong social infrastructure. In strong social welfare states there may be less of a need for targeted supports (industry or community).

CONCLUSION

From its labour union origins, the just transitions concept has now been mainstreamed across a wide range of policy measures. This scoping review has looked to those regions that have undergone industrial transitions to explore the range of policy instruments that have been used to manage this change. What we find is that there are a growing range of measures that provide a mixture of sectoral and sometimes targeted supports but that the coordinating mechanisms between these measures and across scales are underdeveloped. Moreover, there is a risk that the branding of instruments as leading a just transition does not adequately address justice in it multiple forms; in effect, that the concept has been diluted amidst its growing use. How can just transitions work maintain the important elements of its activist roots amidst its mainstreaming in regional and national policies?

The Covid 19 pandemic has accelerated calls for a just transition and the idea that we have an environmental, social and economic imperative to build back better (C40, 2020; Climate Justice Alliance, 2021; The Coalition of Finance Ministers for Climate Action, 2020). There is hope that the scale of impacts from Covid 19 will open up possibilities for more coordinated approaches to the suite of challenges posed by climate change and industrial transitions. The range of policy levers analyzed give an idea of the suite of approaches that can be used, however additional research is needed on the effectiveness of just transitions measures. While there are a growing number of government plans and strategies to support just transitions it is not often evident how GHG emissions will be in fact reduce, how labour transitions will be managed and how workers, communities and marginalized peoples will be included in the process.

#### Perceived austerity is what drives the growth imperative. The CP’s redistributive approach demonstrates that quality of life improvements are compatible with transition, which enables it to scale.

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Five – Pathways to a Post-Capitalist World,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 152-182

One way to solve this problem is with a wealth tax (or a solidarity tax, perhaps). The economists Emmanuel Saez and Gabriel Zucman have proposed a 10% annual marginal tax on wealth holdings over $1 billion. This would push the richest to sell some of their assets, thus distributing wealth more fairly. But in an era of ecological crisis, we must be more ambitious than this. After all, nobody ‘deserves’ this kind of wealth. It’s not earned, it’s extracted: from underpaid workers, from cheap nature, from rent-seeking, from political capture and so on. Extreme wealth has a corrosive effect on our society, on our political system, and on the living world. We should have a democratic conversation about this: at what point does hoarding become destructive and unacceptable? $100 million? $10 million? $5 million?

As we saw in the previous chapter, reducing inequality is a powerful way to reduce ecological pressure. It cuts high-impact luxury consumption by the rich, and reduces competitive consumption across the rest of society. But it also removes pressures for unnecessary growth. The policies I’ve proposed here would lead to a disaccumulation of capital. This would cut rentseeking behaviour, and the rich would lose their power to force us to extract and produce more than we need. The economy would shift away from unnecessary exchange-value and more towards use-value. It would also reduce political capture and improve the quality of democracy; and democracy, as we will see later, has intrinsic ecological value.

Decommodify public goods and expand the commons

As we scale down excess industrial production we can mitigate impact on livelihoods by distributing labour, income and wealth more fairly. But there’s another crucial point to add. Remember, when it comes to human welfare, it’s not income itself that matters; it’s the welfare purchasing power of income that counts.

Let’s take an example that’s close to my own experience: housing in London. House prices are astronomically high, to the point where a normal two-bedroom flat may cost £2,000 a month to rent, or £600,000 to buy. These prices bear no relationship to the cost of the land, materials and labour involved in building a house. They’re a consequence of policy decisions, such as the privatisation of public housing since 1980, and the low interest rates and quantitative easing that have pumped up asset prices since 2008. Meanwhile, wages in London have not kept pace – not even close. To cover the gap, ordinary Londoners have had to either work longer hours or take out loans (which represent a claim on their future labour), just to access a basic social good they used to be able to get for a fraction of the cost. In other words, as house prices have soared, the welfare purchasing power of Londoners’ incomes has declined.

Now, imagine we drive rents down with permanent rent controls (a policy that 74% of British people happen to support38 ). Prices would still be outrageously high, but suddenly Londoners would be able to work and earn less than they presently do without any loss to their quality of life. Indeed, they would gain in terms of extra time to spend with family, hanging out with friends, and doing things they love.

We could do the same thing with other goods that are essential to people’s well-being. Healthcare and education are obvious ones. But why not the internet? Why not public transport? Why not basic quotas of energy and water? Researchers at the University of London have demonstrated that a full range of what they call Universal Basic Services could be publicly funded (with progressive taxation on wealth, land, carbon, etc.) at costs much lower than we presently spend, while guaranteeing everyone access to a decent, dignified life.39 On top of this, we could invest in public libraries, parks and sports grounds. Facilities like these become particularly important as we shorten the working week, so that people can spend their time in ways that enrich well-being with little environmental impact.40

Decommodifying basic goods and expanding the commons allows us to improve the welfare purchasing power of incomes, so people can access the things they need to live well without needing ever-higher incomes in order to do so. This approach reverses the Lauderdale Paradox we explored in Chapter 1. Capitalists enclose commons (‘public wealth’) in order to generate growth (‘private riches’), forcing people to work more simply to pay for access to resources they once enjoyed for free. As we create a postgrowth economy we can flip this equation around: we can choose to restore commons, or create new commons, in order to render ever-rising incomes unnecessary. The commons become an antidote to the growth imperative.

A theory of radical abundance

This brings us to the real heart of a post-capitalist economy. Ending planned obsolescence, capping resource use, shortening the working week, reducing inequality and expanding public goods – these are all essential steps to reducing energy demand and enabling a faster transition to renewables. But they are also more than that. They fundamentally alter the deep logic of capitalism.

In Chapter 1 we saw how the rise of capitalism depended on the creation of artificial scarcity. From the enclosure movement to colonisation, scarcity had to be created in order to get people to submit to low-wage labour, to pressure them to engage in competitive productivity, and to recruit them as mass consumers. Artificial scarcity served as the engine of capital accumulation. This same logic operates today. It’s all around us. Take the labour market, for example. People feel the force of scarcity in the constant threat of unemployment. Workers must become ever more disciplined and productive at work or else lose their jobs to someone who will be more productive still – usually someone poorer or more desperate. But as productivity rises, workers get laid off – and governments have to scramble for ways to grow the economy in order to create new jobs. Workers themselves join in the chorus calling for growth, and push to elect politicians who promise it. But it doesn’t have to be this way. We could deliver productivity gains back to workers in the form of higher wages and shorter hours. The constant threat of unemployment is due to an artificial scarcity of jobs.

We see the same thing happening when it comes to the distribution of income. The vast majority of new income from growth gets siphoned straight into the pockets of the rich, while wages stagnate and poverty persists. Politicians and economists call for more growth in order to solve these problems, and everyone who is moved by the tragedy of poverty lines up behind them. But it never works as they promise it will, because the yields of growth trickle down so slowly, if at all. Inequality perpetuates an artificial scarcity of income.

This plays out in the realm of consumption too. Inequality stimulates a sense of inadequacy. It makes people feel that they need to work longer hours to earn more income to buy unnecessary stuff, just so they can have a bit of dignity.41 In this sense, inequality creates an artificial scarcity of well-being. In fact, this effect is quite often wielded as an intentional strategy by economists and politicians. The British Prime Minister Boris Johnson once stated that ‘inequality is essential for the spirit of envy’ that keeps capitalism chugging along.

Planned obsolescence is another strategy of artificial scarcity. Retailers seek to create new needs by making products artificially short-lived, to keep the juggernaut of consumption from grinding to a halt. The same goes for advertising, which stimulates an artificial sense of lack; a sense that something is literally missing. Ads create the impression that we are not beautiful enough, or masculine enough, or stylish enough.

And then there’s the artificial scarcity of time. The structural compulsion to work unnecessarily long hours leaves people with so little time that they have no choice but to pay firms to do things they would otherwise be able to do themselves: cook their food, clean their homes, play with their children, care for their elderly parents. Meanwhile, the stress of overwork creates needs for anti-depressants, sleep aids, alcohol, dieticians, marital counselling, expensive holidays, and other products people would otherwise be less likely to require. To pay for these things, people need to work yet more to increase their incomes, driving a vicious cycle of unnecessary production and consumption.

We see artificial scarcity being imposed on our public goods too. Since the 1980s endless waves of privatisation have been unleashed all over the world, of education, healthcare, transport, libraries, parks, swimming pools, water, housing, even social security. Social goods everywhere are under attack for the sake of growth. The idea is that by making public goods scarce, people will have no choice but to purchase private alternatives. And in order to pay, they will have to work more, producing additional goods and services that must find a market, and thereby creating new pressures for additional consumption elsewhere in the system.

This logic reaches its height in the politics of austerity, which was rolled out across Europe in the wake of the 2008 financial crisis. Austerity (which is literally a synonym for scarcity) is a desperate attempt to restart the engines of growth by slashing public investment in social goods and welfare protections – everything from elderly heating allowances to unemployment benefits to public sector wages – chopping away at what remains of the commons so that people deemed too ‘comfortable’ or ‘lazy’ are placed once again under threat of hunger, and forced to increase their productivity if they want to survive. This logic is overt, just as it was in the eighteenth and nineteenth centuries. During the government of British Prime Minister David Cameron, welfare cuts were conducted explicitly in order to get ‘shirkers’ to work harder and to be more productive (‘workfare’, they called it).

Over and over again, it becomes clear that scarcity is created, intentionally, for the sake of growth. Just as during the enclosures in the 1500s, scarcity and growth emerge as two sides of the same coin.

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This exposes a remarkable illusion at the heart of capitalism. We normally think of capitalism as a system that generates so much (just consider the extraordinary cornucopia of stuff that’s displayed on television and in shopfronts). But in reality it is a system that is organised around the constant production of scarcity. Capitalism transforms even the most spectacular gains in productivity and income not into abundance and human freedom, but into new forms of artificial scarcity. It must, or else it risks shutting down the engine of accumulation itself. In a growth-oriented system, the objective is not to satisfy human needs, but to avoid satisfying human needs. It is irrational and ecologically violent.

Once we grasp how this works, solutions rush into view. If scarcity is created for the sake of growth, then by reversing artificial scarcities we can render growth unnecessary. By decommodifying public goods, expanding the commons, shortening the working week and reducing inequality, we can enable people to access the goods that they need to live well without requiring additional growth in order to do so. People would be able to work less without any loss to their well-being, thus producing less unnecessary stuff and generating less pressure for unnecessary consumption elsewhere. And with our extra free time we would no longer have to engage in the patterns of consumption that are necessitated by time scarcity.42

Liberated from the pressures of artificial scarcity, and with basic needs met, the compulsion for people to compete for ever-increasing productivity would wither away. The economy would produce less as a result, yes – but it would also need less. It would be smaller and yet nonetheless much more abundant. In such an economy private riches (or GDP) may shrink, reducing the incomes of corporations and the elite, but public wealth would increase, improving the lives of everyone else. Exchange-value might go down, but use-value will go up. Suddenly a new paradox emerges: abundance is revealed to be the antidote to growth. In fact, it neutralises the growth imperative itself, enabling us to slow down the juggernaut and release the living world from its grip. As Giorgos Kallis has pointed out, ‘capitalism cannot operate under conditions of abundance’.43

Some critics have claimed that degrowth is nothing more than a new version of austerity. But in fact exactly the opposite is true. Austerity calls for scarcity in order to generate more growth. Degrowth calls for abundance in order to render growth unnecessary. If we are to avert climate breakdown, the environmentalism of the twenty-first century must articulate a new demand: a demand for radical abundance.

### JG Solves---AT: Biology

#### Children and history disprove.

Giorgos Kallis 18, ICREA professor at ICTA, Autonomous University of Barcelona, “The Case for Degrowth,” Degrowth, Agenda Publishing, 2018, pp. 85–116

This naturalistic analogy is wrong on many counts. First, perpetual growth does not exist in nature. Children and trees grow “up” to a point - they do not grow at a compound rate ad infinitum. No species grows to infinity, and when a population grows too much and consumes too many resources, it collapses before it reaches a new ecological balance with other species.

Second, if growth is natural, then why did it appear only in the last two centuries (Figure 3.1) and only in some parts of the world? For most of human history, there was no growth. There was perhaps an impulse for societies to expand their territory or their resources to pay off debts or settle surplus population. But in many places, like classical Greece, institutions, moral codes and myths were set up to contain this impulse (Skidelsky & Skidelsky 2012). If “natural” is what appeared first, before “civilization” altered our biological instincts, or if it refers to what has been observed in most civilizations and for the greatest share of human history, then what is natural is the restriction of the expansion impulse, not its unleashing.

Also, if growth were natural, why would economists spend their time trying to understand its origins? Most of the “causes” of growth that economists find - such as education, innovation, institutions or social capital - do not just naturally happen. They involve reflection, and collective action.

To be fair, the liberal argument is not that growth happens naturally, but that there is a natural potential for it, suppressed by humans and their institutions. Historically, however, the most impressive periods of growth, from the postwar West to the early Soviet Union to modern China, involved state planning and intervention; the record of free-market liberalism is weak in comparison. The very concept of growth was invented in the 1930s as the self-regulated market collapsed and states stepped in to relaunch economic growth. There is nothing natural about any of this.

But why should this process of commodification be taken as a given? Branco Milanovic (2017) defends the idea that it is the pursuit of growth that is inevitable, if not natural, within capitalist economies, not growth per se. Capitalist economies commodify everything, he argues. Having money in commodified societies brings prestige and the respect of peers as people need money to access pretty much everything. It is natural then for everyone to want an increase in the nation’s income, as they perceive that this will increase their own chances of doing well.

Milanovic’s unspoken premise is that capitalism - with its class relations, relentless commodification and positional consumption - is inevitable, and so the pursuit of growth is too. But this is a mere tautology: yes, if one accepts that capitalism is inevitable, then the processes that go with it (commodification, pursuit of growth, etc.) are also inevitable. But this is not proof of capitalisms superiority or inevitability, much less of the naturalness of any of it. As economist and philosopher father and son Robert and Edward Skidelsky (2012) argue, the endless pursuit of wealth without an external referent other than the very pursuit of it is “senseless” (they also use the word “madness”). The fact that a whole social system is built around this mad pursuit does not make it more reasonable.

As we will see below, when we ask people what makes them happy, money does not make it to the top of the list. Growth does not increase happiness. 'Ibis is not to deny that lack of growth in growth-based societies can be a disaster (Latouche 2009). The challenge is how to create societies in which lack of growth is not a disaster. That the pursuit of growth is imperative within capitalist, growth-based societies does not mean that growth and capitalism as such are inevitable, much less that they are desirable. Serfdom was also inevitable in feudal societies, but this did not make serfdom inevitable or necessary in general. As Ursula Le Guin eloquently puts it: "We live in capitalism. Its power seems inescapable. So did the divine right o f kings. Any human power can be resisted and changed by human beings.” There is nothing inevitable or permanent in history, as societies always change and can always change their institutions, values and relations. To assert that things cannot change and that they have by necessity to stay the way they are, like Milanovic does, is a political position, as valid as the one that claims that things could and should change.

### JG Solves---AT: Crisis Key

#### Even if crisis is necessary, it fails on its own. Policy change like the aff is required to pre-figure economic systems for transformation.

Samuel Alexander 15, lecturer at the Office for Environmental Programs, University of Melbourne, “10 The Deep Green Alternative: Debating Strategies of Transition,” Sufficiency Economy, Simplicity Institute, 2015, pg 270-272

In many ways this final ‘pathway’ could be built into all of the previous perspectives, because none of the theorists considered above (especially the DGR camp) would think that the transition to a deep green alternative could ever be smooth, rational, or painless. Even many radical reformers, whose strategy involves working within the institutions of liberal democracy rather than subverting or ignoring them, clearly expect political conflict and economic difficulties to shape the pathway to the desired alternative (Gilding, 2011). Nevertheless, for those who are deeply pessimistic about the likelihood of any of the previous strategies actually giving rise to a deep green alternative (however coherent or well justified they may be), there remains the possibility that some such alternative could arise not by design so much as by disaster. In other words, it is worth considering whether a crisis situation – or a series of crises – could either (i) force an alternative way of life upon us; or (ii) be the provocation needed for cultures or politicians to take radical alternatives seriously. Those two possibilities will now be considered briefly, in turn.

As industrial civilisation continues its global expansion and pursues growth without apparent limit, the possibility of economic, political, or ecological crises forcing an alternative way of life upon humanity seems to be growing in likelihood (Ehrlich and Ehrlich, 2013). That is, if the existing model of global development is not stopped via one of the pathways reviewed above, or some other strategy, then it seems clear enough that at some point in the future, industrial civilisation will grow itself to death (Turner, 2012). Whether ‘collapse’ is initiated by an ecological tipping point, a financial breakdown of an overly indebted economy, a geopolitical disruption, an oil crisis, or some confluence of such forces, the possibility of collapse or deep global crisis can no longer be dismissed merely as the intellectual playground for ‘doomsayers’ with curdled imaginations. Collapse is a prospect that ought to be taken seriously based on the logic of limitless growth on a finite planet, as well as the evidence of existing economic, ecological, or more specifically climatic instability. As Paul Gilding (2011) has suggested, perhaps it is already too late to avoid some form of ‘great disruption’.

Could collapse or deep crisis be the most likely pathway to an alternative way of life? If it is, such a scenario must not be idealised or romanticised. Fundamental change through crisis would almost certainly involve great suffering for many, and quite possibly significant population decline through starvation, disease, or war. It is also possible that the ‘alternative system’ that a crisis produces is equally or even more undesirable than the existing system. Nevertheless, it may be that this is the only way a post-growth or post-industrial way of life will ever arise. The Cuban oil crisis, prompted by the collapse of the USSR, provides one such example of a deep societal transition that arose not from a political or social movement, but from sheer force of circumstances (Piercy et al., 2010). Almost overnight Cuba had a large proportion of its oil supply cut off, forcing the nation to move away from oil-dependent, industrialised modes of food production and instead take up local and organic systems – or perish. David Holmgren (2013) published a deep and provocative essay, ‘Crash on Demand’, exploring the idea that a relatively small anti-consumerist movement could be enough to destabilise the global economy, which is already struggling. This presents one means of bringing an end to the status quo by inducing a voluntary crisis, without relying on a mass movement. Needless to say, should people adopt such a strategy, it would be imperative to ‘prefigure’ the alternative society as far as possible too, not merely withdraw support from the existing society.

Again, one must not romanticise such theories or transitions. The Cuban crisis, for example, entailed much hardship. But it does expose the mechanisms by which crisis can induce significant societal change in ways that, in the end, are not always negative. In the face of a global crisis or breakdown, therefore, it could be that elements of the deep green vision (such as organic agriculture, frugal living, sharing, radical recycling, post-oil transportation, etc.) come to be forced upon humanity, in which case the question of strategy has less to do with avoiding a deep crisis or collapse (which may be inevitable) and more to do with negotiating the descent as wisely as possible. This is hardly a reliable path to the deep green alternative, but it presents itself as a possible path.

Perhaps a more reliable path could be based on the possibility that, rather than imposing an alternative way of life on a society through sudden collapse, a deep crisis could provoke a social or political revolution in consciousness that opens up space for the deep green vision to be embraced and implemented as some form of crisis management strategy. Currently, there is insufficient social or political support for such an alternative, but perhaps a deep crisis will shake the world awake. Indeed, perhaps that is the only way to create the necessary mindset. After all, today we are hardly lacking in evidence of the need for radical change (Turner, 2012), suggesting that shock and response may be the form the transition takes, rather than it being induced through orderly, rational planning, whether from ‘top down’ or ‘from below’. Again, this ‘nonideal’ pathway to a post-growth or post-industrial society could be built into the other strategies discussed above, adding some realism to strategies that might otherwise appear too utopian. That is to say, it may be that only deep crisis will create the social support or political will needed for radical reformism, eco-socialism, or ecoanarchism to emerge as social or political movements capable of rapid transformation. Furthermore, it would be wise to keep an open and evolving mind regarding the best strategy to adopt, because the relative effectiveness of various strategies may change over time, depending on how forthcoming crises unfold.

It was Milton Friedman (1982: ix) who once wrote: ‘Only a crisis – actual or perceived – produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around.’ What this ‘collapse’ or ‘crisis’ theory of change suggests, as a matter of strategy, is that deep green social and political movements should be doing all they can to mainstream the practices and values of their alternative vision. By doing so they would be aiming to ‘prefigure’ the deep green social, economic, and political structures, so far as that it is possible, in the hope that deep green ideas and systems are alive and available when the crises hit. Although Friedman obviously had a very different notion of what ideas should be ‘lying around’, the relevance of his point to this discussion is that in times of crisis, the politically or socially impossible can become politically or socially inevitable (Friedman, 1982: ix); or, one might say, if not inevitable, then perhaps much more likely.

It is sometimes stated that every crisis is an opportunity – from which the optimist infers that the more crises there are, the more opportunities there are. This may encapsulate one of the most realistic forms of hope we have left.

### JG Solves---AT: Empirics

#### Empirics aren’t disproof. Crisis isn’t a cure-all---it can only make alternatives hegemonic if they exist in the first place.

Jochen Markard & Daniel Rosenbloom 20, Markard is with the Department of Management, Technology and Economics, Group for Sustainability and Technology, ETH Zurich; Rosenbloom is with the Department of Political Science, University of Toronto, “A Tale of Two Crises: COVID-19 and Climate,” Sustainability: Science, Practice and Policy, vol. 16, no. 1, Taylor & Francis, 12/10/2020, pp. 53–60

Socio-technical perspectives (Kemp, Schot, and Hoogma 1998; Rip and Kemp 1998) indicate that far-reaching changes in societal systems such as energy supply, transportation, and agri-food are difficult to realize due to complex interdependencies among technologies, infrastructures, regulations, businesses, user practices, and lifestyles. Engaging with the politics of transitions, lock-in, and resistance to change can also be understood as problems of vested interests—where influential actors seek to prevent major (policy) changes in climate policy and other domains (Meadowcroft 2011; Meckling and Nahm 2019; Shove and Walker 2007).

Yet, despite these strong lock-ins, established systems do change, sometimes even in fundamental ways. Such shifts have been referred to as socio-technical transitions in the innovation studies literature (Geels 2002; Rotmans, Kemp, and van Asselt 2001). Transitions are multi-dimensional (technological, institutional, political, sociocultural), far-reaching shifts in socio-technical systems. Research suggests that transitions tend to occur when established systems are disrupted by external shocks and alternative configurations (technologies, businesses, practices) are available (Geels and Schot 2007; Kemp, Schot, and Hoogma 1998).

A key insight from transition studies is that major shocks like the oil crises in the 1970s or the Fukushima nuclear accident in Japan in 2011 can cause fundamental changes in existing systems. Shocks can trigger new socio-technical developments such as widespread innovation in renewable energy technologies during the post-oil crisis era but they can also accelerate transformations that are already ongoing such as the deepening shift away from nuclear post-Fukushima (Markard et al. 2020). Public policies can play a key role in harnessing these shocks and guiding systemic changes, for example, to address sustainability concerns (Voß, Bauknecht, and Kemp 2006; Smith, Voß, and Grin 2010). However, policies can also fail to capitalize on crises or work at cross-purposes from sustainability objectives, resulting in a return to established arrangements. A notable instance of this was the 2007‒2008 financial crisis.

Another important insight from transition studies is that fundamental changes in production and consumption are required (McMeekin, Geels, and Hodson 2019). Deep decarbonization cannot be achieved by simply optimizing existing systems but only through radically transforming them (Rosenbloom et al. 2020). To be sure, the challenge we are facing is enormous: while initial estimates of the global carbon dioxide (CO2) emission reductions stemming from the COVID-19 pandemic are approximately 5% for 2020, reductions of above 7% will be required every year to reach the 1.5 °C target (Storrow 2020).

Harnessing disruptive forces to accelerate decline

One strategy to address the climate challenge is to harness disruption. The coronavirus outbreak has seriously unsettled the vast majority of businesses, economic activities, and consumption practices. Despite having detrimental impacts, this dislocation may offer opportunities to break carbon lock-ins and open low-carbon pathways in domains such as energy supply, mobility, tourism, or consumption. Figure 1 depicts, in a stylized fashion, how decline and innovation go hand in hand as key processes of sustainability transitions. The disruptive forces of the COVID-19 pandemic can be used to accelerate decline—in other words, to “shift down” carbon-intensive technologies so that the transition occurs more rapidly than otherwise forecasted to be the case. This acceleration is particularly important as many carbon-intensive infrastructures and assets (e.g., power plants, pipelines, inefficient buildings and heating systems, vehicles, machinery) require replacements or upgrades in the coming years.

Diagram

Description automatically generated

Jurisdictions that have implemented programs to address climate change or that have already embarked upon the phase-out of certain unsustainable industries may use the current disruption to accelerate the decline of carbon-intensive industries or practices. One example is coal-fired power generation. Several countries including Canada, Finland, Germany, and Italy have already decided to phase-out coal for climate and health reasons (see poweringpastcoal.org). From a climate perspective, it will be crucial to continue this course of action and to avoid using recovery funds to revitalize the coal industry. Even more, there is an opportunity to accelerate the ongoing phase-out: fiscal stimulus triggered by the coronavirus outbreak could be used to support early retirement or retraining of workers in coal mining and related industries. This acknowledges the very real human cost of the COVID-19 pandemic yet refrains from bailing out carbon-intensive firms (Adkin and Davidson 2020).

The German government, for example, has set aside billions of euros to help create new industries around energy-efficiency technologies in regions of the country that will be adversely affected by the closure of mining and the associated job losses (Oei et al. 2020). Of course, restructuring entire regional economies is a demanding, long-term endeavor for which ongoing strategies and long-term commitments will be required. Earlier experiences with industry decline in British coal mining show that there is a risk that these transformations happen at the expense of local communities (Johnstone and Hielscher 2017). Channeling recovery funds to former workers, regional development initiatives, and new businesses rather than incumbent fossil-fuel firms can be an important first step.

Leveraging policy responses to promote low-carbon innovation

In conjunction with harnessing disruptive forces, policy responses to the COVID-19 pandemic can be leveraged to build the systems of the future and to lay the foundations for desirable low-carbon pathways (Figure 2). On the one hand, this involves advancing green industrial strategies that seek to create new industries, services, and business models. In this way, recovery programs can be used to expand industrial capacity in low-carbon innovations such as wind and photovoltaics, electric vehicles, heat pumps, and efficiency-enhancing technologies. Such investments would help to accelerate transitions that are already underway in the energy sector (Markard 2018). But similar efforts can also be envisioned for other sectors including, for example, advancing local food provision, organic farming, and non-meat alternatives in the agriculture sector (Reisch, Eberle, and Lorek 2013).

Diagram

Description automatically generated

On the other hand, the coronavirus outbreak offers an opportunity to rethink consumption and lifestyles in a more fundamental way. We know that technological innovation can only get us part of the way and that major changes on the “demand side” are needed as well (Shove and Walker 2010; Alfredsson et al. 2018). Unfortunately, many technological improvements in the past have often been offset by increasing levels of consumption (Schor 1999; Sorrell 2009).

The current lock-down and other immediate responses have greatly affected our daily practices and lifestyles (e.g., slowing the pace of living, driving a resurgence in home cooking and baking, increasing the reliance on working remotely and e-commerce, along with limiting non-essential travel). Of course, not all of these changes have positive effects on greenhouse-gas emissions and other sustainability dimensions. And while several changes may be transient phenomena that have the potential to quickly disappear once restrictions are relaxed, the COVID-19 pandemic may catalyze processes of change that can be made to last by building out support for a living wage or basic income, greater work-life balance or reduced working hours, and notions of sufficiency (in material accumulation but also travel and consumption in general) or self-sufficiency (local food and energy provision). The opportunity we have is to maintain and establish new low-carbon practices and, even more importantly, to reflect about (and ideally adjust) our needs in a more substantial way. Perhaps re-discovering the benefits of nearby vacations instead of flying to remote destinations, substituting high-frequency business travel with online meetings, and so on.

Conclusion: Reflecting on sustainability transition policy principles

Accelerating the decline of carbon-intensive industries, technologies, and practices along with promoting low-carbon innovation form important components of what has been recently termed “sustainability transition policy” (STP) (Rosenbloom et al. 2020). This policy orientation has been offered as an alternative to market-driven logics to address sustainability challenges. In this view, policy making must target systemic and co-evolutionary shifts in energy, agri-food, transportation, and other provisioning systems. These changes not only relate to technologies, infrastructures, and markets but also to actor coalitions, user practices, regulations, and so forth. The notion of STP is best thought of as a continuous, enduring process of policy making, including feedbacks, failures, policy learning, and adaptation (Edmondson, Kern, and Rogge 2019; Rotmans, Kemp, and van Asselt 2001; Voß, Smith, and Grin 2009). This policy making strategy involves a coherent sequence of interacting policy choices—drawing on a mix of instruments (Kern, Rogge, and Howlett 2019)—that together help drive socio-technical changes consistent with long-term pathways to decarbonization (Rosenbloom 2017).

In this concluding section, we lay out five principles of STP that can be used to re-embed climate considerations within responses to the COVID-19 pandemic. First, STP targets both innovation and decline. The former is important to ensure the development of alternatives such as low-carbon technologies as well as their associated businesses and opportunities. The latter is key, as discussed above, to erode lock-ins that perpetuate carbon-intensive arrangements, to support a re-orientation of incumbent actors, and to ensure the timely phase-out of obsolete technologies and practices.

Second, STP is tailored to transition phases. In early stages of a transition, for example, innovation policies can create niches in which new solutions are developed and tested (Raven et al. 2016; Schot and Geels 2008), while in later periods policies can support market formation and diffusion of more sustainable alternatives (Dewald and Truffer 2011; Jacobsson and Lauber 2006). Similar considerations apply to decline. Early on, it is important to signal the termination of certain technologies and consumption practices referred to variously as phase-out (Rogge and Johnstone 2017) or destabilization (Turnheim and Geels 2012)—through long-term policy targets. Policies such as carbon pricing or specific phase-out regulations can then enforce and accelerate decline (Baranzini et al. 2017; Rosenbloom 2018). Such efforts must remain cognizant of the associated human costs of decline and related equity concerns (Healy and Barry 2017; Hughes and Hoffmann 2020), supporting households and communities as change processes advance.

The abovementioned phasing has particular relevance for the coronavirus crisis which is marked by short-term efforts to mitigate economic collapse and longer-term initiatives aimed at recovery (Steffen et al. in press). Immediate responses should avoid throwing good money after carbon-intensive industries. Instead, they should target sector-specific solutions that can be implemented quickly, have proven effective, and are robust across different future low-carbon scenarios. Examples include expanding new renewables and energy storage, introducing strict energy efficiency standards, prioritizing public transit and bicycles in cities, and providing incentives for electric mobility. Longer-term responses should target investments in infrastructures such as power corridors, train lines, hydrogen networks and public charging stations, as well as other innovations that will be key for more sustainable systems of the future—low-carbon transport, remote workspace technologies, smart cities, integrated e-mobility services, and sustainable tourism. Even more radical and emerging possibilities can also be supported at smaller scales, with a strong role for local and community-based initiatives that can be scaled up as they take hold (Sengers, Wieczorek, and Raven 2019).

A third principle is that STPs are “context sensitive” in the sense that low-carbon transition plans are attuned to particular sectors, jurisdictions, and regional circumstances. The underlying rationale is that there are major differences across sectors, industries, and jurisdictions that make some solutions more or less appropriate for specific contexts. Think of “difficult-to-decarbonize” systems such as agri-food, air travel, or heavy industry (e.g., steel and cement), which require specific, often even radical solutions like a reduction of consumption (flying less), a substitution of products (plant-based proteins, wood-based construction), or new business practices (emphasizing reuse and repairability rather than planned obsolescence) (Bataille 2020). An element of a long-term coronavirus response strategy could be to launch sector-specific innovation initiatives for deep decarbonization, with a particular focus on creating opportunities in those regions hardest hit by COVID-19 disruption.

A fourth principle is to carefully monitor the progress of the transition in order to avoid unwanted effects such as new lock-ins into “dead-end pathways” which are solutions that provide short-term improvements yet have limited long-term potential to reach decarbonization (Layzell and Beaumier 2018). These kinds of lock-ins are particularly problematic if they come with long-lasting infrastructures. For example, natural gas as a substitute for coal-fired power generation falls into this category (Rosenbloom 2020). It promises short-term gains but investments in new pipelines and storage terminals will demand long-term returns and use.

Finally, it is important to account for the crucial relevance of politics. Effective transition policies cannot be enacted without the support of key stakeholders. As a consequence, an important principle of STP is to build strong coalitions of actors (innovators, advocacy groups, new businesses, re-orienting incumbents) who will support the transition as it advances (Meckling et al. 2015). Currently, many incumbent actors that typically have strong influence on policy making are weakened—the state will be needed to ensure their survival. This represents a unique window of opportunity to strengthen the constellation of actors supportive of a transition by, for instance, actively guiding incumbents toward low-carbon business models (e.g., with the state becoming a shareholder) and supporting new or existing proponents (e.g., creating new funding programs for low-carbon innovators).

To clarify, incumbents can play a role in supporting change as they shift their business models over time (Steen and Weaver 2017; Turnheim and Sovacool in press). Bail outs for larger firms outside of the fossil fuel sector might accelerate this diversification process by imposing specific conditions such as equity shares, suspension of stock buybacks and specific sustainability commitments. Similarly, subsidies to industries such as automobiles and agri-food can prioritize more sustainable alternatives (e.g., electric vehicle sales targets and organic farming requirements) (Eriksen 2020). However, any effort to transition these sectors will need to remain attuned to context specific conditions.

Perhaps most importantly however, politics forms the backdrop for new narratives for change. At present, considerable discursive work is being carried out to enmesh responses to both climate change and COVID-19 (Galbraith and Otto 2020; Peters 2020). The idea of “building back better” (United Nations 2020) is already gaining traction and the leveraging approach we offer follows this logic (Rosenbloom and Markard 2020). But this says nothing of the multitude of other narratives that can help promote changes in lifestyles, institutions, and business practices. The response to the coronavirus pandemic suggests that health, in particular, offers a promising way to realize rapid change. This is also borne out by the health-related storylines that have helped drive the phase-out of coal in certain jurisdictions (Isoaho and Markard in press; Rosenbloom 2018).

In summary, we have shown that strategies and approaches are available to address both the coronavirus and climate crises. Currently, there is a unique opportunity to use the disruptive forces of the COVID-19 pandemic and the associated recovery policies to accelerate the transition to more sustainable, low-carbon systems, industries, and lifestyles. As time is running out for effective climate policies and there are limited resources available to tackle overlapping crises separately, it is imperative for policy making to leverage these synergies.

### JG Solves---AT: Empirics---AT: COVID

#### COVID built enormous momentum for decentralized forms of social organization---those only failed because of inadequate government support, which the aff solves!

Giorgos Kallis et al. 20, Giorgos Kallis, ICREA Professor at the Institute of Environmental Science and Technology, Autonomous University of Barcelona; Susan Paulson, Professor at the Center for Latin American Studies, University of Florida; Giacomo D’Alisa, FCT post-doctoral fellow at the Centre for Social Studies, University of Coimbra; Federico Demaria, lecturer in ecological economics and political ecology at the University of Barcelona, “The case for degrowth in a time of pandemic ,” openDemocracy, 5-14-2020, https://www.opendemocracy.net/en/oureconomy/case-degrowth-time-pandemic/

The pandemic has lain bare the fragility of existing economic systems. Wealthy nations have more than enough resources to cover public health and basic needs during a crisis, and could weather declines in non-essential parts of the economy by reallocating work and resources to essential ones. Yet the way current economic systems are organized around constant circulation, any decline in market activity threatens systemic collapse, provoking generalized unemployment and impoverishment.

It doesn’t have to be this way. To be more resilient to crises – pandemic, climatic, financial, or political – we need to build systems capable of scaling back production in ways that do not cause loss of livelihood or life. We make the case for degrowth.

Conservative outlets such as Forbes, the Financial Times, or the Spectator, have been pronouncing that the coronavirus crisis reveals “the misery of degrowth”. But what is happening during the pandemic is not degrowth. Degrowth is a project of living meaningfully, enjoying simple pleasures, commoning, sharing and relating more with others, and working less, in more equal societies. The goal of degrowth is to purposefully slow things down in order to minimize harm to humans and earth systems and to reduce exploitation.

The current situation is terrible, not because carbon emissions are declining, which is good, but because many lives are lost; it is terrible not because GDPs are going down, to which we are indifferent, but because processes in place to protect livelihoods when growth falters are grossly insufficient and unjust.

We would like to see societies become slower by design, not disaster. This pandemic is a growth-induced disaster, harbinger of more to come. Drives for growth have accelerated global flows of material and money, paving the way for lightning-fast circulation of bodies and diseases. The economic policies and social arrangements proposed by degrowth offer ways to make such situations more livable and just, to emerge stronger and better post-crisis, and to reorient practices and politics towards care and community solidarity.

The end of growth will not necessarily involve a smooth transition. It may very well be unplanned, unwilled, and messy, in conditions not of our own choosing. Conditions like the ones we are living through now. History often evolves with punctuations; periods of seeming paralysis can reach a tipping point, when unexpected events open new possibilities and violently close others. The COVID-19 pandemic is such an event. Suddenly, things take radical new directions, and the unthinkable becomes thinkable, for better or for worse. Severe economic depression led to Roosevelt’s New Deal, and also to Hitler’s Third Reich. What are the possibilities and dangers now?

Amid this pandemic, many scientific, political, and moral authorities are communicating the message that caring for people’s health and wellbeing should come before profit, and that is great. A resurgence of a care ethic that we advocate in our forthcoming book The Case for Degrowth is evident in the willingness of people to stay home to protect their elders, and in the spirit of duty and sacrifice among care and health workers. Of course, many stay home also because they fear the virus and worry about themselves, or to avoid police fines. And many care workers go to work because they must earn a living. Acting collectively against crises, pandemic, or climate change requires such combinations of sacrifice and solidarity, self and collective interest, government interventions and people’s participation.

Deep inequalities are coming into play in new ways. Residents of some countries are suffering different, and sometimes more severe, hardships than those of others, as are those who are deprived of full citizenship in prisons, migrant labor camps, and refugee settlements. Within each country, actors differentiated by gender, racial, socioeconomic, and occupational positions suffer different vulnerabilities in the face of the disease, and of the economic downturns that follow. Data from countries around the world show that COVID tends to be much more severe and deadly in men than in women. US Centers for Disease Control and Prevention show a disproportionate burden of illness and death among racial and ethnic minority groups. Nurses, health aids, and caretakers, positions in which women prevail, are especially vulnerable to infection. As are millions of men working in essential jobs including sanitation, trucking, taxi-driving, and meat packing. These jobs, in very large majority performed by men, were already among the most dangerous occupations before adding exposure to coronavirus. While some have the luxury of sheltering at home, others must choose between unemployment without an adequate safety net and working at jobs that expose them to the coronavirus. Yet, unless whole populations are protected, not even the wealthiest are fully safe from contagion.

In this crisis, like others before, people have mobilized and self-organized where businesses and governments have failed to provide for their needs – from mutual aid groups delivering food and medicines for elders, to groups of doctors, engineers, and hackers collaborating to 3-D print components for oxygen ventilators, to students babysitting the children of doctors and nurses. The proliferation of caring and commoning endeavors, which form the bedrock of the degrowth societies we envision, are all the more commendable given the contagious nature of the virus. After the pandemic is over, and the difficult path of economic reconstruction starts, this resurgent dynamism of commoning and care will be vital.

Positive impulses among individuals and grassroots networks are necessary but not sufficient for sustained change. We need governments to secure healthcare for all, protect the environment, and provide economic safety nets.The degrowth-supporting policies we advocate were necessary before the pandemic, and are more so during and after: a Green New Deal and public investment program, work-sharing, a basic care income, universal public services, and support for community economies. So is the reorganization of public finance through measures including carbon fees, caps on wealth and high incomes, taxes on natural resource use, and pollution.

Whereas degrowth debates have traditionally focused on demobilizing resource-intensive and ecologically damaging aspects of current economies, pandemic responses deal with demobilizing those aspects not immediately essential for sustaining life. We coincide in facing the fundamental challenge of managing political economies without growth during and after the pandemic: how to demobilize parts of the capitalist economy while securing the provisioning of basic goods and services, experimenting with resource-light ways of enjoying ourselves, and finding collective meanings in life.

Radical proposals are already being considered and selectively adopted across the political spectrum as they provide concrete solutions amid the pandemic. Companies and governments have reduced working hours and implemented work-sharing; different forms of basic income are being debated; financial measures have been instituted to subsidize workers in the quarantine period and after businesses close; an international campaign for care income has been launched; governments have engaged the productive apparatus to secure vital supplies and services; and moratoriums are being considered or imposed on rent, mortgage, and debt payments. There is growing understanding that vast government spending will be required.

The world will change after the pandemic, and there will be struggles over which paths to take. People will have to fight to direct change toward more equitable and resilient societies that have gentler impacts on humans and natural environments. Powerful actors will try to reconstitute status quo arrangements, and to shift costs to those with less power. It takes organizing and a confluence of alliances and circumstances to ensure that it won’t be the environment and the workers who pay the bill, but those who profited most from the growth that preceded this disaster.

Degrowth is not forced deprivation, but an aspiration to secure enough for everyone to live with dignity and without fear; to experience friendship, love, and health; to be able to give and receive care; to enjoy leisure and nature, and to legitimize a life that it is also an experience of interdependence and vulnerability. This goal will not be met by subsidizing fossil fuel companies, airlines, cruise ships, hotels, and tourism mega-businesses. Instead, states need to finance Green New Deals and rebuild their health and care infrastructures, creating jobs in a just transition to economies that are less environmentally damaging. As oil prices fall, fossil fuels should be taxed heavily, raising funds to support green and social investments, and to provide tax breaks and dividends to working people. Rather than using public money to bail out corporations and banks, we urge the establishment of a basic care income that will help people and communities to reconstruct their lives and livelihoods. These fundamental questions related to the strategies for socio-ecological transformation will be at the center of the international Vienna degrowth conference taking place as an online event in late May 2020. A good starting point are the principles for the recovery of the economy and the basis of creating a just society contained in the open letter ‘Degrowth: New Roots for the Economy’.

This crisis arguably opens up more dangers than it does possibilities. We worry about the politics of fear that the coronavirus pandemic engenders, the intensification of surveillance and control of peoples’ movements, xenophobia and blame of others, as well as home isolation that curbs commoning and political organizing. Once measures such as curfews, quarantines, rule-by-decree, border controls, or election postponements are taken, they can easily become part of the arsenal of political possibility, opening dystopian horizons.

To counter these risks, degrowth motivates and guides us to re-found societies on the commons of mutual aid and care, orienting collective pursuits away from growth and toward wellbeing and equity. These are not just lofty aspirations; in our forthcoming book The Case for Degrowth we identify everyday practices and concrete policies to start building the world we want today, together with political strategies to support synergy among these efforts in the construction of equitable and low-impact societies. This book is unlike any other on degrowth, in that it is the first to try to address the hard question of 'how to' in the current political conjuncture.

Before the pandemic, we had to work hard to convince people of the case for degrowth. Our job may be somewhat easier now amid such tangible evidence that the current system is crumbling under its own weight. As we embark on the second major global economic crisis in a dozen years, perhaps some of us will be more willing to question the wisdom of producing and consuming more and more, just to keep the system going. The time is ripe for us to refocus on what really matters: not GDP, but the health and wellbeing of our people and our planet.

#### COVID’s failing to spur mindset shifts now because the collapse has ended and policymakers are failing to respond with redistributive initiatives.

Maurie J. Cohen 20, Program in Science, Technology, and Society, New Jersey Institute of Technology, “Does the COVID-19 Outbreak Mark the Onset of a Sustainable Consumption Transition?,” Sustainability: Science, Practice and Policy, vol. 16, no. 1, Taylor & Francis, 12/10/2020, pp. 1–3

While the present situation is being treated as an emergent economic crisis, it merits acknowledging that sustainability scientists and policy makers have implicitly been seeking to achieve over the past decade broadly similar objectives—albeit with greater political subtlety and awareness for adverse societal consequences—in the form of a sustainable consumption transition (see, e.g. O’Rourke and Lollo 2015; Valentine, Ruwet, and Bauler 2015; Røpke 2015; Welch and Southerton 2018). 1 It merits recognizing that COVID-19 is simultaneously a public health emergency and a real-time experiment in downsizing the consumer economy.

Social scientists have long recognized that disasters, especially when the scale of their tragic consequences emerges with modest but steady pace, have a tendency to catalyze processes of social change. For instance, the renowned Russian-American sociologist Pitirim Sorokin observed in 1942 that society “is never the same as the one that existed before the calamity. For good or ill, calamities are unquestionably the supreme disruptors and transformers of social organization and institutions” (Sorokin 1942).

Although current circumstances pose unique challenges to foretelling the future, it is notable that medical authorities are now making comparisons to the Spanish flu of 1918 and 1919 that internationally resulted in the death of 50 million people (Chen et al. 2020; Lambert 2020). While it is extremely premature to suggest that the current public health emergency will reach this alarming level, political regimes in a number of the most severely affected countries are coming under profound strain due to intensifying anxiety about the coronavirus epidemic. With respect to supply chains, at least some of the stopgap measures being implemented to get through the next few weeks or months will become locked in on a longer-term basis. Consumers are stockpiling nonperishable food and other supplies and public authorities have not disclaimed the eventual need for rationing and other consumption controls.

A practical outcome is that we are liable to see customarily face-to face activities move to virtual platforms as users become more acclimated with online interfaces for conducting business, delivering educational programing, and engaging in a widening range of social activities. Experience in China to date suggests that extended periods of quarantine create novel forms of consumer demand as people cope with the exigencies of isolation. The more protracted the threat of contagion proves to be, the further engrained and resistant to reversal these adaptive responses will become. As is frequently the case in the aftermath of disasters, we will quickly forget “how things used to be.”

Nonetheless, as soon as circumstances allow, there will be vigorous promotional efforts encouraging us to revert to “normal.” We should expect a relentless stream of inducements from governments and companies encouraging consumers to get out of the house and back on the bandwagon. Central banks are already signaling a willingness to lower interest rates—already in negative territory in some countries—as far as necessary to make this happen. Many individuals are likely, at least initially, to respond positively to these appeals, but we should not be surprised in due course to discover that other predilections have supplanted once-familiar practices.

While it may seem both fanciful and insolent, COVID-19 is an opportunity to reduce over the longer term the prevalence of lifestyles premised on large volumes of energy and material throughput. At the same time, imperatives for social distancing to lower the risk of community transmission will regrettably reinforce commitments to individualized rather than public and shared modes of consumption. Despite what appears to be an increasingly dire public health emergency, policy makers should work to ensure that the coronavirus outbreak contributes to a sustainable consumption transition. This would be one way to offset some of the unfortunate suffering and disruption caused by this event.

### JG Solves---AT: Leakage

#### 1) DEGROWTH AVOIDS---leakage occurs when the price of carbon-intensive activity rises. This requires demand for carbon-intensive output to remain steady, which degrowth prevents.

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The relationship between unilateral climate policy and international trade has been of major interest in the last years. The focus of attention has been on carbon leakage. Leakage occurs if emission reductions in one country are offset by emission increases elsewhere (Felder and Rutherford, 1993). It mainly works through two channels: First, stricter climate policy in one country will lead to higher carbon prices (e.g. through carbon certificates, taxes, or regulations). This will make carbon-intensive production relatively more expensive in that country. In response, production in strongly affected sectors may relocate to other countries with laxer climate policy and increase emissions there. Carbon-intensive goods can then be redistributed to the first country via international trade. Second, stricter climate policy in one country will lead to lower energy demand. This in turn leads to a fall of the price for energy on the world market. In response, other countries may use more energy in production relative to other factor inputs and hence increase emissions. In this case, climate policy leads to an adjustment of energy intensities via the international energy market (see e.g. McAusland and Najjar, 2015).

The obvious and ideal solution to overcome carbon leakage is a globally coordinated climate policy which involves all countries. The Paris Climate Agreement marks an important step in this direction. However, past negotiations have highlighted the difficulty to coordinate and enforce targets on a global level. The Paris Agreement relies on targets which are individually determined and not internationally enforceable. If some countries fail to submit or fulfil their targets, sub-global initiatives will prevail. Hence, a better understanding of unilateral action remains important.

Besides global climate policies, an instrument that may be capable of reducing carbon leakage is degrowth. Degrowth has been proposed by a growing group of 1 authors as a policy alternative to more conventional measures such as pure emission targets.1 As a climate policy, degrowth implies not only an emission reduction, but also the downscaling of the economy as a whole. In particular, degrowth is often assumed to restrict the quantity of available factor inputs (e.g. working time, natural resources and land). With restricted factor inputs, production will be reduced. Since degrowth additionally decreases income via lower total factor income and hence demand for products, the decline in carbon-intensive production due to stricter policy is less likely to be compensated by an increase in production abroad. Degrowth can therefore potentially limit leakage.

The interest in degrowth and related fields (such as steady-state economics, ecological macroeconomics, prosperity/managing without growth, and Postwachstum, sometimes jointly summarised as post-growth) has considerably grown during recent years. Contributions to these fields are diverse. There is no single account of what exactly degrowth means and what precise policies would follow from it (see e.g. van den Bergh, 2011).2 Regarding climate policy, what is common to most authors is that they argue for at least a temporary downscaling or stabilisation of the economy as a whole. Due to the high degree of coupling between economic activity and environmental impact, degrowth is seen as a necessary measure to reduce and stabilise the economic impact on the environment (see e.g. Schneider, Kallis, and Martinez-Alier, 2010; Kallis, 2011; Research & Degrowth, 2010).

A number of degrowth studies are based on the LowGrow model by Victor and Rosenbluth (2007) and Victor (2008, 2012), or the SIGMA and FALSTAFF models developed by Jackson, Drake, Victor, Kratena, and Sommer (2014), Naqvi (2015), Jackson and Victor (2015, 2016), and Jackson, Victor, and Naqvi (2016). LowGrow results suggest that degrowth can substantially decrease emissions for Canada and at the same time improve welfare in terms of poverty, inequality, adult literacy, and longevity when appropriately adjusting tax rates and public spending on health care and education. Similar results have been obtained when the model was applied to the German, French, and Swedish economy (see Gran (2017); Briens and Ma¨ızi (2014a,b); and Malmaeus (2011), respectively). SIGMAand FALSTAFF-based studies show that declining growth rates need not lead to higher inequality (Jackson and Victor, 2016) and that zero growth can be stable in the presence of interest-bearing debt (Jackson and Victor, 2015).

All of these studies rely on a single-economy model. We therefore take a complementary approach to previous studies by investigating degrowth scenarios in a multi-country general equilibrium framework. Specifically, we use the extended version of the structural gravity model developed by Larch and Wanner (2015).3 This model incorporates a sectoral production structure with varying energy-intensities. A trade model with such a sectoral structure is well suited to capture the first, trade-driven leakage channel. The additional inclusion of a separate energy sector in which prices can adjust endogenously and which uses an internationally tradable energy resource (such as oil or other kinds of fossil fuels) allows to take into account the second, energy-market, leakage channel. Different from classical quantitative trade gravity models,4 this model also includes two economy-environment feedback channels. One channel works through the production structure which uses energy as an input factor and generates emission as a side output. The other channel works through the utility function in which higher global emission levels negatively affect welfare. While we hold this model structure to be well suited to consider the trade and leakage effects of degrowth policies, it restrains us from considering a number of other interesting questions related to degrowth, such as distributional consequences within countries, alternative welfare indicators, or questions related to the monetary system.

The goal of this paper is to investigate how the embedding of a country into the world economy affects the consequences of national degrowth policies. To this aim, we compare a pure emission reduction policy in which the policy country only reduces its energy use to degrowth scenarios in which it also reduces other factor usages. We investigate the emission effects in both the policy country and all other countries, additionally making use of a decomposition of emission effects into scale, composition, and technique effects. Further, we try to identify the driving factors that determine in which macroeconomic circumstances the differences between pure energy reduction scenarios and degrowth policies are particularly pronounced.

Our main result is that degrowth can substantially limit leakage compared to pure energy reduction policies. Reducing all national factors rather than only curbing energy use cuts the median leakage rate to about a quarter (6.67%) of the energy reduction scenario median leakage rate (25.87%). When additionally reducing the supply of energy resources to the international market, degrowth implies even negative median leakage rates (−9.59%), i.e. the reduction in carbon emissions achieved in the policy country is reinforced by other countries’ reactions to the policy. Degrowth in terms of national production factors mainly works by limiting the large compositional changes that go in hand with pure energy reduction policies, i.e. degrowth eliminates the shift towards imports of dirty products in the policy country. When including a reduction of the energy resource supply to the world market, degrowth additionally acts strongly via the technique effect. As the world supply of energy resources is shortened, non-policy countries no longer face the incentive to increase the energy-intensity of their production. Regarding the macroeconomic context of climate policy, we find that degrowth reduces leakage in almost all countries, but can be most effective compared to the pure energy reduction scenario when implemented in small, trade-open and clean countries. However, the reduction in leakage rates comes at the cost of substantially larger welfare losses in our model structure.

#### 2) US IS KEY---it has huge emissions AND shapes global policy

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In this context, the reaction in the global climate community to Joe Biden’s election as U.S. president has been overwhelmingly positive. The world sees the importance of U.S. action to limit overall global temperature rise, and President Biden’s campaign, appointments — including former secretary of state John Kerry as special presidential envoy for climate — and early actions in office indicate his interest in a new approach to climate change. However, the Biden administration immediately faces a difficult challenge. Four years of U.S. absence from the global climate community — including global climate negotiations and international efforts to reduce greenhouse gas emissions — have left a big gap in international leadership and credibility. How does the new administration meet the moment? How does the United States regain its credibility on the world stage?

Since greenhouse gas emissions mix throughout the global atmosphere and oceans, emissions in one part of the world impact the climate everywhere. The Paris Agreement calls for all countries to reduce emissions in line with their own development goals and political realities. But science suggests that a goal of net-zero emissions from the largest emitting countries by mid-century is necessary. In this context, credible U.S. action is critical. As the world’s largest economy, second-largest greenhouse gas emitter, and superpower re-engaging on climate diplomacy, U.S. actions can either dampen or accelerate global action. If the United States fails to make commitments that the rest of the world views as serious, it will be harder to pressure other countries to take more serious action. Credible U.S. action could form the basis for genuine leadership, as the United States displayed preceding the Paris COP through its bilateral commitments with China.

#### U.S. action is modeled

Joel A. Mintz 21, Professor of Law Emeritus and the C. William Trout Senior Fellow in Public Interest Law at Nova Southeastern University College of Law, Former EPA Enforcement Attorney and Chief Attorney, Member Scholar and Board Member at the Center for Progressive Reform, “Leadership and the challenge of climate change”, The Hill, 7/20/2021, https://thehill.com/opinion/energy-environment/563898-leadership-and-the-challenge-of-climate-change

Within the United States, much change is also needed. Our nation must once again use its continuing influence abroad to encourage effective climate-related reforms. The U.S. had an active behind-the-scenes role in the arduous negotiations that led to the Paris Agreement. Much more such quiet, determined diplomacy is needed in Glasgow and thereafter. Beyond this, the United States must set a good example for other nations by meeting its own climate responsibilities. Legislation to regulate greenhouse gas emissions in a direct and forthright manner is long overdue. Moreover, mitigating climate change must be a government-wide priority and not the province of EPA and the Department of Interior alone. There is also a great need for federal financial aid to state and local governments to combat climate change.

#### 3) MOVEMENTS SOLVE---they go global and get others on board

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Finally, to make matters more challenging still, there is also the geo-political risk of being a leader in a degrowth transition, as this may involve fewer funds available for military forces, weakening a nation’s relative power globally. Can we imagine powerful nations like the US, Russia or China voluntarily embracing degrowth if that meant reduced geopolitical security or influence? This is a classic prisoners’ dilemma situation, which applies as much to capitalist governments as socialist ones: it may well be in the interests of even the most powerful nations to embrace degrowth in order to avoid ecosystemic collapse, but in the distrustful world of geopolitics, nations end up choosing courses of action which are ultimately not in their, or anyone else’s, or the planet’s, best interests. Again, the logic here is simple: grow the economy for military strength, or risk being invaded and destroyed. In the end perhaps this is one of the most compelling of the various growth imperatives, but all of these issues radically call into question the feasibility of a ‘top down’ transition to a degrowth economy. A ‘great disruption’ of some form may be a necessary or inevitable part of the transition beyond growth, a disconcerting issue to which we will return in later chapters.

The central point however is that nation-states have various growth imperatives built into their structures, meaning that governments should not be relied on to be the prime drivers of any degrowth transition. This calls for a further reconsideration of conventional Marxist theory, in so far as taking control of the state may not necessarily be the best way to initiate the transition to a just and sustainable low-energy future, for a socialist state may find itself locked into unsustainable growth just as capitalism is. Put otherwise, a post-growth state may only ever be the outcome, not the driving force, of a movement for degrowth.

The Politics of the Household Economy: Driving Suburban Change ‘From Below’

The line of reasoning just sketched out presents a deep challenge to the notion of suburban transformation in the spirit of degrowth—or any post-growth agenda—insofar as it questions the coherency of such a transformation being initiated and driven by governments which are under the spell of growth fetishism. At the same time, that challenge sets up one of the theoretical points of distinction of this book. If con- ventional representative democracy in advanced capitalist societies is unable to accommodate the degrowth imperative by virtue of politicians and dominant institutions being locked into the growth model, then it follows that the emergence of degrowth in the suburbs will have to depend on a post-capitalist politics of participatory democracy (Gibson- Graham 2006).

We locate these new politics of change in the suburbs, traditionally the crucible of the growth order, which is one reason we firmly claim our imaginary to be radical—certainly radically out of kilter with the conventional political wisdom of contemporary Western democracies. Perhaps in the age of Trump and of generally widening political and social distemper, this misalignment, while radical, is not as uncommon as it might have been a decade ago. We live in an age of unsettlement that is centred in the cities and their troubled heartlands and hinter- lands, and it is perhaps therefore timely to think of, and from, suburbia in profoundly new ways.

Theories of urban development typically look to governments, local and national, to take the lead in transforming urban landscapes to pro- mote sustainability and wellbeing. This is especially so when the prob- lems requiring a coordinated response—such as climate change—are deep, urgent, and often ‘wicked’. Nevertheless, in many parts of the world today, including Australia, recent and current government pol- icies provide little hope that the range of structural changes necessary to create more sustainable, post-carbon cities will emerge from the top down. Despite paying lip service to sustainability issues, most polit- ical actors still operate firmly within the out-dated growth paradigm where new roads, new coal mines, or fracking for oil and gas are touted as solutions to urban transport and energy problems, and too often we see cities continuing to eat away at their surrounding greenways with conventional, expansionist, poorly designed housing developments. Business-as-usual more or less prevails, for reasons primarily owing to the growth imperatives we have just described. Political actors mistake the poison of growthism for the cure, and when the poison doesn’t cure anything and, indeed, often makes things worse, they assume they mustn’t have had enough of it. In the words usually attributed to Horace Walpole: ‘the world is a comedy to those who think, and a trag- edy to those who feel’.

So far as governments are failing to act coherently in the face of today’s ecological and energetic emergencies, it becomes ever-more important to look towards grassroots movements and practices as the key to urban renewal ‘from below’. This political positioning is funda- mental to the suburban imaginary we will develop in this book, which calls for and rests on a democratic renaissance of sorts, whereby peo- ple reclaim the right of self-governance from their distant, so-called representatives. This means re-localising political power through par- ticipatory and collective action, rather than waiting for governments to solve problems which they are either unable or unwilling to solve.

Indeed, the broad suburban consuming class—although heterogeneous in its constitution—presents itself today as having the potential to become a transformative social movement. As outlined above, we see this social class as constituted both by workers struggling to ‘get by’, as well as more affluent ‘post-materialist’ suburbanites who are increasingly disillusioned and alienated by the unfulfilled promises of consumerism, and who seek an alternative and more meaningful way of life (Inglehart and Welzel 2005). In ways we will develop in this book, we see these social forces combining—potentially at least—to reweave a fraying economy from the grassroots up, reconstituting the economic and social fabric of suburbia in new ways and on new terms (Albert 2004).

Thus a post-capitalist politics is one in which the power of people acting collectively is able to outweigh the undemocratic influence of money in politics, and this includes social resistance to ongoing vertical sprawl masquerading as ‘green growth’. More fundamentally, our post-capitalist politics recognises that governments are in the thrall of a growth fetish, so any economics beyond growth must be driven into existence by mechanisms that utilise but transcend the ballot box. To be clear, this does not mean that governments will not have a key role to play in mitigating the range of crises currently unfolding on the global stage, only that waiting for a top down solution would involve waiting while the ship of growth capitalism drifts over the cliff into the dark abyss below—like Thanatos, unable to resist its own death-drive.

Re-accomplishing Democracy Through Participation

A new suburbia, we argue, depends on this new, post-capitalist polit- ical orientation, which implies a renewal of participatory democratic spirit. It was with characteristic insight that the great American phi- losopher, John Dewey (1981–90: 299), wrote: ‘Every generation has to accomplish democracy over again for itself’. His point was that, at each moment in history, citizens and nations inevitably face unique challenges and problems, so we should not assume the democratic insti- tutions and practices inherited from the past will be adequate for the conditions of today. Our ongoing political challenge, therefore, is to ‘accomplish’ democracy anew, every generation.

It seems the world’s democratic societies today have forgotten Dewey’s lesson. Too often it is assumed instead that democracy is some- thing that has been achieved already, once and for all. Why do we need to reinvent it? Indeed, in the wake of each democratic election it is easy to be seduced back to the comfortable unfreedom of the shopping mall or withdraw into the existential numbness of social media or television, believing that, having voted, one’s political work is done. The task of governing is now in the hands of our so-called representatives. That’s surely what political participation means in market capitalistic society.

This is, of course, an impoverished, even dangerous, conception of democracy, which democratic societies today propagate by way of casual apathy at their own peril. It is government of the people, certainly, but not government by the people, and increasingly not government for the people. With respect to urban development, this emasculation of democracy plays out in terms of capital overriding the interests of peo- ple and planet—a process we have called hypertrophic urbanism.

It may be that an ecological blindness is in fact an inherent feature of the very structure of representative democracy. Unable or unwilling to look beyond the short-term horizon of the next election and con- strained by the undemocratic but often hidden influence of money in policy formation, politicians are essentially prohibited from taking a geological or eco-centric view of things, which is necessary for the preservation of the biosphere. To avoid making hard decisions, envi- ronmental costs are pushed into the future, all glossed over by a tech- no-optimism that promises ecological salvation through technology, innovation, design and market mechanisms.

From this perspective there is no need to question consumer life- styles or conventional growth-orientated modes of urban and suburban development. One consequence of this non-confronting myth is that the voices of future generations fall on deaf ears—rendering democracy decidedly ‘unrepresentative’ in this glaring way, to say nothing of the holocaust of biodiversity whose victims had no voice at all. We surely need to rethink the neoliberal politics of representative democracies in and for the Anthropocene (Purdy 2015).

In regressive political contexts, such as contemporary Australia, it is at the household and community levels where people generally have most agency—most freedom to influence their world—so it is at this grassroots level where we will examine what could be done, here and now, to embrace, or at least prepare for, an energy descent future in the spirit of degrowth. People may not feel like they have much influence over the decisions of their members of parliament, or the decisions of big business or other global institutions, all of which are fatally infected with growth fetishism. But within the structural constraints of any society there nevertheless resides a realm of freedom through which individuals and communities can resist and oppose the existing order and make their influence felt (Holloway 2002; Trainer 2010; Holmgren 2018).

It is in those cracks which permit a degree of urban autonomy and self-governance where we argue people must thrust the crowbar of oppositional activity in the hope of leveraging their influence. However small those acts of opposition or renewal might seem in isolation, when they form part of a large social movement or cultural shift, their cumulative impact can reshape society ‘from below’ and ultimately form a tidal wave of transformative significance, washing away the old imaginary, or aspects of it, and clearing space for the new. A brief glance at the history of (partially successful) urban social movements shows this to be true—civil rights, women’s rights, gay rights, etc. The future may hold further confirmation in new domains of life—suburban transformation, perhaps—if only we choose it.

### JG Solves---AT: Leakage---US Key

#### The US is key---it’s the largest emitter. Its industrial policy inflicts massive environmental calamity.

Sam Bliss 18, Gund Graduate Fellow, Rubenstein School of Environment and Natural Resources, University of Vermont, “The Incipient Degrowth Movement in the United States,” 3236387, 08/21/2018, Social Science Research Network, doi:10.2139/ssrn.3236387

Introduction

The United States of America has cumulatively emitted more carbon dioxide than any other country on earth (WRI 2017). Its gross domestic product is the highest or second highest of all nations, depending on how one converts between currencies (World Bank 2018). Its material footprint is second only to China’s; about 27 metric tons of materials are taken from farms, forests, mines, and other extraction sites every year to make the products Americans consume (Wiedmann et al. 2015). In other words, 74 kilograms of nature is extracted every day to feed, house, clothe, entertain, and satisfy the average U.S. resident. The U.S. uses crops, lumber, fuels, fertilizers, metals, plastics, minerals, and other substances faster than they can be sustainably supplied and faster than ecosystems can safely assimilate the resultant byproducts (Hoekstra and Wiedmann 2014, Global Footprint Network 2018). In an economy that has grown so biophysically big, the costs of growth have likely long outweighed its benefits (Daly 2014). The U.S. has plenty of degrowing to do.

Yet a degrowth movement is just beginning to materialize in the United States. This article is about that embryonic effort. After briefly introducing degrowth, I draw on the small published literature from the U.S. and the results of an informal survey of degrowth advocates to roughly characterize and constructively critique the narratives of the nascent scholar-activist movement. Then, a discussion of this depiction traces the contours of a broader issue that degrowthers face: navigating the entanglement of science and politics. Since scientific knowledge can at most suggest that a course of action like degrowth is necessary to achieve a given, desired end – rather than find that it is necessary as such – degrowth narratives must illustrate the desirability of their vision if they are to produce a political movement. The article concludes with two recommendations for building alliances with existing U.S. political movements: take a firm anti-oppression stance and organize opportunities to think together about desirable futures.

Degrowth

Degrowth is the rejection of economic growth (D’Alisa et al. 2014). Degrowth scholars argue that growth is increasingly undesirable, ultimately unsustainable, and unavoidably exploitative (Kallis 2018). When economic growth is the primary political goal of society – as it is today virtually everywhere – other social and environmental goals are subordinated and sacrificed in its pursuit. Well-meaning ideas like sustainable development or the circular economy get co-opted and ultimately rendered environmentally meaningless by pro-growth interests (Mulrow and Santos 2017). Degrowth, by comparison, is deliberately subversive (see Vansintjan and Bliss 2016).

Degrowth is also the hypothesis that achieving ecological sustainability and social justice in developed countries will require equitably downscaling their economies, and that such a transformation can maintain or even improve well-being (Sekulova 2014, Kallis et al. 2019). Today’s principal planetary environmental challenges – climate change, ocean acidification, biodiversity loss, plastics pollution, particulate matter, nutrient loading – are symptoms of too-big economic scale. The global economy, driven by elites and Western countries, burns too much fuel transforming too much nature into too many products. Too much carbon and other wastes are released and too many habitats are destroyed (Rockström et al. 2009, Steffen et al. 2015). Growth means more of these things, happening faster (Ayres and Warr 2010, Wiedmann et al. 2015, Burke et al. 2015, Stern 2004). A degrowth transition must emphasize equity, ensuring basic human needs are met while cutting private luxury consumption and the incomes of the already-rich.

### JG Solves---AT: Leakage---No Link

#### Degrowth does not link to leakage.

Mario Larch et al. 17, Mario Larch is Professor for Empirical Economics at the University of Bayreuth; Markus Löning is a PhD Student at UCL and an Enrichment Student at The Alan Turing Institute; Joschka Wanner is an empirical economist working on international and environmental economics, as well as econometrics, at the Kiel Institutet for the World Economy, “Can Degrowth Overcome the Leakage Problem of Unilateral Climate Policy,” CESifo Working Paper, No. 6633, Center for Economic Studies and ifo Institute (CESifo), Munich, 8/25/2017, https://www.econstor.eu/bitstream/10419/171097/1/cesifo1\_wp6633.pdf

5 Conclusion

Unilateral climate policy is associated with the problem of carbon leakage. Using the quantitative trade model with energy production by Larch and Wanner (2015), we investigate whether and how degrowth can solve this leakage problem. We find that reducing all national production factors rather than only the energy input reduces leakage strongly by eliminating incentives of uncommitted countries for compositional shifts towards production of dirtier products. When additionally restricting the degrowth country’s supply of energy resources to the international market, leakage is further reduced by preventing a fall in the world energy resource price and hence eliminating incentives for uncommitted countries to shift towards overall more energy-intensive production techniques. The higher environmental effectiveness of degrowth comes at the cost of strong real income losses for the country undertaking the policy. Relating our results to underlying country characteristics, we find that the potential of degrowth to reduce leakage compared to conventional energy-based climate policies is especially high in small, trade-open economies with clean production methods

### JG Solves---AT: Leakage---Modeling

#### International follow-on is feasible due to the urgency of the climate crisis.

Jamie Kendrick & Olivia Lazard 23, Kendrick is editor-in-chief of the Green European Journal, a political magazine of green ideas and analysis; Lazard is a fellow at Carnegie Europe and researches the geopolitics of climate-disrupted futures and ecological breakdown, “Olivia Lazard: 'Degrowth needs a strong geopolitical and geo-economic proposition',” EU Observer, 5/12/23, https://euobserver.com/growth-week/157026

You've called for a global public good regime, ie. deeper global cooperation to maintain stable planetary conditions. Isn't the prospect of Putin, Xi, Biden and others sitting around the table to manage global public goods more distant than ever?

Yes and no. In any critical historical juncture, you always have concurrent and simultaneous forces at play. The war in Ukraine created tectonic shifts of historical dimensions. The EU shifted its view about the European Green Deal from being a project that was created for Europeans by Europeans, to recognising with the REPowerEU Directive that the Green Deal depends upon an international dimension. The Critical Raw Materials Act will see the EU engage in a new type of diplomacy which is mineral, technological and economic.

I talk about a global public good regime because I believe that the reality of climate disruptions is going to hit so hard, that even the fundamental path dependencies around understanding security from a very nationalistic perspective will change. They will still have moments of last-minute glory, like the fossil fuel industry is having its last-minute glory as a result of the war, but it's going to be very hard to tackle complex problems without global cooperation.

The global balance of power cannot expand beyond planetary boundaries. Even China knows it. Redesigning collective security systems and folding economic exchange under global security will be possible as a result of the urgency and gravity of climate disruptions that are hitting us.

If you look at where policies are supposed to go until 2030, it brings home this notion of planetary boundaries, of re-reasoning with economic sectors to move towards regenerative ecosystems writ-large, including human ecosystems. I've seen all of these words for the very first time in EU documents. These new initiatives only date back a year. The rupture caused by the war in Ukraine opened up a new world of possibilities around what diplomacy and cooperation should look like. We also had, for example, the finalisation of the High Seas Treaty which had been in negotiations for 20 years.

Ideas such as planetary boundaries, wellbeing and postgrowth are making their way into EU policy. The degrowth community and European Union bureaucrats and MEPs are two different communities, not to say planets. Where might this growing dialogue lead?

They used to be very distant planets but the planets are trying to come together, maybe through Saturn-like rings. I take as great hope the fact that the European Commission is funding a 10-million-euro research project that Giorgos Kallis, Julia Steinberger and Jason Hickel are leading. It's one of the largest Horizon grants. It is an incredibly positive sign.

I know from private conversations that even people working as chief economists within various DGs are engaging in these conversations behind closed doors. They are grappling with the question of what is degrowth and what does it mean? It's an entirely different way of thinking about economics and everyone needs time for everyone to adapt. It's not as if people within the EU — and I insist on the notion of people rather than institutions — are not concerned about the situation.

However, moving institutions is difficult and it takes time. I think they will move faster and faster as a result of various crises. The reality that we need to avoid is what I call "planic": planned panic. Take the responses around food security as a result of the war in Ukraine. President Macron said we need to double down on wheat production in the EU and countries like Egypt. This is nonsensical. It makes sense with the current economic rationale but it is baking more and more shocks into the system because how to produce wheat through monoculture is a systemic risk.

#### The acute nature of the sustainability emergency will drive other countries to bandwagon.

Manuel Arias-Maldonado 22, Full Professor in Political Science at the University of Málaga, Spain, “Politics in the Anthropocene,” Altered Earth: Getting the Anthropocene Right, edited by Julia Adeney Thomas, 1st ed., Cambridge University Press, 03/31/2022, pp. 160–181 DOI.org (Crossref), doi:10.1017/9781009042369

Green Communitarianism. Green communitarianism provides another way forward to mitigate the damage of our destabilized Earth System. This approach seeks to decrease the human impact on natural systems by reducing the size and scale of social systems without giving up democratic values. Instead of a global capitalist economy, communitarianism relies on self-organizing communities that embrace new social values and protect the commons. Politically, it leans towards democratic republicanism – a tradition that emphasizes direct participation, public deliberation, and the involvement of all members of the community in the defense of the common good. Neither individual freedom nor state coercion play a significant role in this approach, which heavily depends on public trust and civic engagement. The ideal held up by communitarianism is one of social harmony, collective effort, and voluntary selflimitation. In its telling, human beings learn to coexist with the planet and with the non-human world while rediscovering the intrinsic value of social bonds.

As progress in the modern sense is contaminated by the pursuit of economic growth and the exploitation of nature, communitarians champion a different understanding of emancipation. Rather than looking for increasing standards of living through mass consumption and individualistic fulfillment, communitarians suggest that a life rooted in the community is more rewarding, providing the benefits of wellbeing that are to some degree unquantifiable. We are to live in a simpler way, finding prosperity in different places and activities: enjoying more spare time, assigning a greater role to individual creativity, doing more meaningful jobs. The emphasis on human flourishing is neatly summarized in John Barry’s motto: “low-carbon, high quality of life” (Barry 2012: 11). It is not just that indefinite growth is ecologically untenable – it is also morally undesirable and spiritually unfulfilling.

Unlike the liberal-democratic approach, which tries to render capitalism sustainable, communitarians usually advocate the shift towards a degrowth society. Degrowth is the sustainable and equitable reduction of society’s throughput – a significant decrease in the materials and energy used by human societies (see Kallis 2011). For all the benefits of wind and solar power, for instance, they are not “zero carbon” and nor can they by themselves sustain a globalized economy whose aim is indefinite economic growth. Therefore, a low-energy society is the only path towards avoiding global inhabitability: small is not just beautiful, but a matter of survival. We get to produce, trade, travel, and consume less, so that social life can be more local and less mobile. Economist Dietrich Vollrath argues that advanced capitalist economies are already moving in this direction, even without “green” imperatives, and that a stagnant economy may be a sign of success (Vollrath, 2020). The shift to renewable energies, strong redistribution schemes and the creation of economic value outside the market – these are the kind of structural changes that degrowth advances. For this change to take place in a democratic manner, thus avoiding the resort to authoritarian forms of governance, people must be recruited for the cause: simple ways of living need to become attractive, so that the “voluntary simplicity” (Alexander, 2013) of communal life is embraced by sufficient numbers of people.

In the meantime, there are places in which degrowth strategies and communal forms of self-organization are being attempted. They lead by example, highlighting the kind of response that local communities should give to the Anthropocene. Take the Transition Towns movement, which started back in 2005 and encourages communities to address planetary challenges at the local level. Initiatives of this kind have been set up in 50 countries – stories abound. There is the partnership between Granja Viana and Brasilândia, two Transition groups rooted in Sâo Paulo that have learnt how to store and filter rainwater from the roofs in a city where droughts are frequent. Or the successful Million Miles project launched in the Black Isle, Scotland, which aimed to cut car travel on the peninsula by a million miles in three years through promoting alternatives such as walking and cycling, the use of public transport, and car-sharing schemes. Another example is Pasadena’s Repair Café, in which people exchange their time repairing for Time Dollars registered by a local Time Bank – an initiative that signals the rise of local money schemes such as the Bristol Pound. These currencies are conceived as tools for empowering local communities, as they encourage transparent economies based on local ownership. Community gardens have also bloomed across the world in recent years. This is a venerable tradition that goes back to the early nineteenth century, when the British government allocated plots of land to the poor to grow vegetables and flowers. In their current understanding, they are places where people grow food, cultivate local communities, and adopt sustainable practices. All these strategies can be seen as means towards building up the “mutualistic city” (presented by Mark Williams in Chapter 12 of this volume) – a city that coevolves with its environment in a harmonious manner and which also tries to prevent the amplification of existing social inequalities.

Sometimes, self-organization involves acts of resistance against decay or commodification. An inspiring story is that of Portpatrick, a beautiful Scottish seaside village whose port fell into disrepair after the loss of its two piers meant that the crossing to Northern Ireland got moved to another town. Villagers knew that the port had to be improved, lest vital tourist revenue should be lost to neighboring harbors. Yet they did not like the plan designed by the harbor’s private owners and looked for a way to buy it back. They came up with the idea of a trust, which over five years led to the acquisition of the place for £350,000. Shares in the harbor were sold for a minimum of £25, yet each shareholder had one vote irrespective of the number of shares they bought. This ownership structure prevents large investors from taking over control and increases the sense of local belonging. Schemes of this kind have since become more common as community businesses have resorted to them across the UK – local pubs, renewable energy schemes, and woodland recovery initiatives have been funded through them.

As these examples make clear, the movement towards greater selfreliance and more democratic forms of local governance does not mark a clean break with capitalism: villagers from Portpatrick were afraid that touristic revenue would disappear, and local enterprises financed through community shares still engage in business. Degrowth is not the absence of growth, though, and a greater problem may lie in the distance between local change and structural transformation. In the current context of Earth destabilization, this piecemeal approach may not yield significant results fast enough. However, perhaps it makes more sense to see green communitarianism as an expression of moral and political pluralism within liberal society – an emergent, alternative way of doing things that supplements larger processes of transformation while contributing to cultural change and the spreading of sustainable values.

Degrowth is not without problems. It is not clear how pluralism can be reconciled with a less dynamic, less mobile society – there is the risk of cultural stagnation as well as the difficulty of restraining the human impulse towards innovation, discovery, and exploration. In other words, while minorities can certainly adopt a communitarian way of life, it is unclear whether majorities will follow suit. In emerging and poor countries, degrowth can be expected to be unappealing. And even if capitalism were to end, people will still have material needs such as energy, clothing, and food. The effects of degrowth on population trends are also hard to foresee – a communitarian way of life, for example, may end up increasing the birth rate. For its advocates, however, green communitarianism is the only means for stabilizing the Earth System without sacrificing democracy on the way.

CONCLUSION: TOWARDS UNITY OF PURPOSE

Reducing the human impact on natural systems in order to stabilize the Earth System and veer away from the dangerous business-as-usual trajectory is the unequivocal goal of a politics for the Anthropocene – how exactly it should be done, however, needs to be negotiated among different social actors and countries. No matter how urgent the task may be, the workings of politics cannot be suspended: people must be persuaded, laws have to be passed, policies need to be implemented. Might human beings fail in stabilizing the Earth System just because they are unable to act in time? This scenario should not be ruled out, and it would certainly be a bitter testimony to the pettiness and unreason of our species. Nevertheless, I have argued that humanity has just enough room to maneuver, provided that it recognizes the magnitude of the challenge ahead. Ultimately, the most important driver of politics in the Anthropocene is the willingness of individuals, institutions, and countries across the globe to implement an ambitious politics for the Anthropocene. Unity of purpose, however, is compatible with a multiplicity of approaches. In turn, as Thomas cautions, the reality of the Anthropocene imposes limits to the kind of stories that we can tell ourselves.

In this chapter, I have given an account of the main responses to the Anthropocene – those provided by liberal democracy, eco-authoritarianism, and green communitarianism. They differ in many respects, including the role they assign to economic growth and the priority they grant to the fight against poverty or inequality: while political liberalism and ecoauthoritarianism seem more interested in keeping a high level of growth and feel more concerned with poverty than with inequality, communitarianism emphasizes the common good and the need for equality even if that means lowering material standards. And while the latter supports degrowth as the means to achieve sustainability, liberal democracy and eco-authoritarianism pursue the greening of growth in the belief that political stability and greater global equality cannot be secured without it. Whether enough greening can be achieved in time to avert irreversible planetary change remains to be seen. Then again, the communitarian model is unlikely to be adopted around the world at the necessary speed, even if it expands its role as a generator of innovative solutions and sustainable lifestyles that also address the question of social justice.

Be that as it may, the problem is apparent: none of these approaches have been implemented at a global level. So far, they are nation-based or even just local-based. In the real world, they all coexist: China is an emerging superpower that leans towards ecoauthoritarianism, while the UK is a liberal democracy in which Transition Towns and other communitarian initiatives have flourished. They can all be said to express an emergent common will, that of confronting the destabilization of the Earth System, albeit by different means. Ideally, stronger global institutions should be developed, so that cooperation among states is significantly increased. And while geopolitical competition hinders the creation of global political bodies, the recognition of humanity as an Earth System agent may push in the opposite direction.

The prospects for creating collective global agency are not propitious: China is on the rise; populism and heightened nationalism resist surrendering any aspect of national sovereignty; and fierce ideological and religious disagreements do not make things any easier. Besides, there is no clear answer as to whether a centralized system or a polyarchy best serves the goal of achieving global sustainability (see Biermann and Dryzek 2016). Hence it looks as though the key role in keeping our planet habitable will be played by international agreements in which different countries adhere to a common goal, such as the Paris Agreement on climate change or the Sustainable Development Goals launched by the United Nations.

Arguably, the Anthropocene should be governed in a democratic manner. Planetary challenges might even reinvigorate actually existing liberal democracies by giving them a unifying motive, a collective goal shared by everyone, irrespective of their ideology, gender, class, or ethnicity. This shared emergency may also strengthen cooperation between democracies and autocracies. Much, however, remains to be seen. For now, the most urgent task is to foster the widespread recognition that stabilizing the Earth System cannot wait – we are now inhabitants of the Anthropocene and we must act accordingly.

#### The aff enables bottom-up municipal movements. Those solve.

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5.6. International solidarity

‘Degrowth in the wealthier world, which would reduce its material impact on the remainder of the planet, is the most effective internationalism, leaving more space for others to live’; so goes the succinct summary of a widely held view within the degrowth spectrum, as described by Max Ajl. By attempting to overcome the imperial mode of living, which is based on the neocolonial appropriation of Global South resources and the externalization of its costs of living to others, degrowth – ‘a corrective prescription for the Global North’ – is putting its own house in order, the reasoning goes.76 And yes, as we have argued by framing degrowth as an ecological global justice movement, degrowth is in this sense internationalist. However, as Ajl continues, ‘there is a thin line between modesty and myopia, an inwards-looking ostrich syndrome, in a country marked by imperial modes of living.’ Instead of confronting the complexities and conflicts of international solidarity, there might be the danger that degrowth becomes a self-sufficient but also self-centered movement of localists that would ‘silence demands for climate reparations’.77 Further, the common argument that degrowth is a movement only ‘for the North’ misses an opportunity to, first, challenge the undisputably global desire for an imperial mode of living, and second, challenge the growth imperatives imposed on the Global South through, for example, structural adjustment, odious debt, or sanctions of countries that seek another path to development.

This highlights the need not only to address issues of international social-ecological justice conceptually, but also to build active alliances with actors in and from the Global South, ranging from movements within the pluriverse of ‘alternatives to development’ to support for environmental justice struggles to solidarity with communities fighting for reparations and to refugees and migrants arguing: ‘We are here because you destroy our countries.’78 If, as we have argued, degrowth is at its core about global ecological justice, international solidarity is central to the degrowth agenda. And this includes not only policies of debt cancellation, support for territorially rooted struggles in the Global South, a strong commitment to ecological reparations and transfers of financial resources, renewable technology and knowledge (including patent waivers), as well as strengthening Indigenous land rights. This also includes the broader constructive programme of reparations as ‘worldmaking’ to create the conditions for a truly just world.79

International solidarity also involves protection of wilderness and the saving of land from enclosure. However, care must be taken when considering different radical proposals for conservation, many of which often rest on colonial assumptions. For example, within degrowth and among its allies, there is strong criticism of global proposals such as that of ‘Half-Earth’, first proposed by biologist E. O. Wilson and increasingly taken up by conservation and development groups. Half-Earth proposes to leave half of Earth’s surface for nature and bereft of human settlement, thereby exacerbating highly colonial processes of dispossession of Indigenous people from their land. Indigenous people, it must be noted, are stewards of up to 65 per cent of the world’s landmass – though only 18 per cent of which is formally recognized as theirs.80 Indeed, Indigenous land stewardship has been shown to be better at limiting carbon emissions and ecological degradation than most policies.81 Further, such proposals, and similar conservation initiatives, operate through the colonial imaginary of separation between humans and nature, while degrowth largely advocates for inter-dependence between humans and non-human life forms, and decolonizing our relationship to nature. It is not humanity as a whole that is the problem – much less the world’s poor living in ecologically fragile areas – but the affluent world driving the majority of extraction, production, and consumption. In terms of policy, alternatives to colonialist conservation proposals include supporting Indigenous peoples in their efforts to steward the land, advocating for land reform and the protection of peasant livelihoods globally, transforming industrial agriculture and production so that it does not rely on as much extraction and production, thereby stopping land degradation globally, and putting a stop to speculative, neo-colonial land grabs – whether carried out by private or public investment firms or conservation NGOs.82

One further issue with degrowth policies is that the economies of industrialized countries must not only be redesigned to be more socioecologically just, the effects of such policies on people in the Global South must also be accounted for. For example, a shift towards unconditional basic services, as well as ecological taxation and a localization of needsoriented production, will likely lead to less consumption overall, less reliance on resource extraction from the Global South, but could possibly also heavily damage the economies of the Global South that rely on exporting resources and consumer goods, or on tourism, as was evidenced by the effects of the COVID-19 lockdown.83

Policies will need to be put in place to address this – not only through supporting the Global South in switching from its dependency on unequal exchange and globalized markets, but also to ensure that degrowth policies do actually lead to greater global justice through a sharing of resources, knowledge, technology, and cooperation as well as through preferential trade arrangements and reparations. Essentially, most non-industrialized countries simply cannot offer basic income or basic services because they cannot borrow money as freely as industrialized countries, and they are already subject to structural adjustment policies imposed by international lending organizations. Addressing this could involve restructuring global finance to democratize uneven economic relationships between the North and South. Of course, this would also require dismantling the ongoing colonialism of industrialized countries practised through, for example, land grabbing and extractivism (increasingly also ‘green extractivism’), as well as ending military imperialism by the West.84

Global trade and the international economic system itself would also eventually have to be entirely transformed. The restructuring of the economy along the lines proposed by degrowth implies a ‘deglobalization’ of economic relations or, as has recently been argued by Utsa and Prabhat Patnaik, a ‘de-linking’ of the Global South from neoliberal globalization and the exploitative trade and financial system dominated by the North.85 The aim is to limit trade in goods and services that are problematic in ecological and human rights terms, largely driven by corporations taking advantage of international wage and price differentials, and often not necessary at all. While degrowth also aims to restrict the international movement of capital – a policy that could play a key role in the transition phase to stabilize international markets – it pursues the expansion of trade that is beneficial (in particular to the Global South), cultural exchange and slow travel, and the freedom of movement of people. It is therefore a matter of regionally anchored but interconnected and open economic relationships and a much more localized production.86 Degrowth, accordingly, does not stand for cultural and nationalist isolationism, homogeneous bioregions, or competition-based economic protectionism, but for ‘open localism’.87 There is also the proposal to ‘Design global, produce local’, which is made increasingly possible through digital means of communication in combination with digitally controlled production. For example, open-source sharing of designs, building plans, and instructions for the production of goods enables localized production based on a global ‘digital commons’.88 At the global level, the aim is to avoid unnecessary transport and environmental costs through regionalization and to reduce regions’ dependencies on the world market.

A key part of international solidarity would be the rewiring of international relations. Municipalities (including rural towns) and cities are envisioned as key actors of change – ‘rebel cities’ or ‘solidarity cities’ would link up and work together to put forward new international alliances – a vision often labelled ‘radical municipalism’.89 This scale of politics is considered to be ideal for degrowth as it is in the municipality that people can practise face-to-face political deliberation.90 In addition to a global environmental and climate justice policy, a major goal is to establish a fair world trade system through radical institutional reforms that would benefit peripheral regions. Possible measures mentioned in this context include global taxes on finance and capital, the creation of a democratic international monetary system (such as the one based on the international currency ‘bancor’ originally proposed by Keynes), equitable market access for public-interest companies, reforming or abolishing international organizations like the World Bank and the International Monetary Fund, and democratically negotiated financial and technological transfers to offset climate debt, the consequences of colonialism, and other negative consequences of capitalist modernity.91

5.7. Why degrowth is viable

This variety of proposals for the economy, social services, technology, work, and international solidarity aim to underpin a degrowth society with more concrete political visions. Even if these are incomplete and in a state of flux and must be further developed and experimented with – according to the Zapatista motto preguntando caminamos, or ‘asking, we walk’ – they are central for turning degrowth into a ‘concrete utopia’. Following Erik Olin Wright, these policies indicate that degrowth is not only desirable, but also viable – meaning that a degrowth society could actually work. Some questions, however, still remain unanswered: Is it achievable? Who is in a position to carry out and implement these fundamental societal transformations, under what conditions, and through which alliances? The question of transformation is discussed in the next chapter.

### JG Solves---AT: MMT is Pro-Growth

#### MMT isn’t inherently pro-growth---the aff’s implementation cements it within socioecological constraints.

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3.2. Integrating socio-ecological constraints into MMT

To the above points, a socio-ecological critique must be added. It is true that many MMT economists are explicitly agnostic about economic growth, and many are critical of GDP as a measure of social and economic progress (e.g. Kelton, 2020; Wray, 2015; Ehnts, 2022).

However, MMT does not yet integrate ecological or social “capacity constraints”. Many MMT economists (but not all: e.g. Kaboub, 2021) tend to ignore or understate the severity of the various ecological crises, and the speed of transformation necessary to mitigate them. A strong focus on climate is prevalent, to the neglect of other planetary boundaries (e.g. Nersisyan & Wray, 2021). Instead, MMT economists tend to conceptualize the ecological crises primarily as an investment gap, and suppose that the biosphere can be stabilized if only enough capital is re-directed away from dirty and towards green sectors and technologies (e.g. Nersisyan & Wray, 2021). Consequently, MMT economists tend to carry over problematic “green growth” notions from (Post-)Keynesianism. Consider for instance the stated objective of “adjust[ing] effective demand to the level of potential output” (Summa, 2022). Normally, this is understood as the level of output compatible with full utilization of the available productive capacities. However, from the perspective of degrowth, productive capacities and available resources are necessarily bound by ecological limits (Georgescu-Roegen, 1971). This becomes apparent in the empirical lack of sufficient absolute “decoupling” between GDP and environmental destruction (D’Alessandro et al., 2020; Hickel & Kallis, 2020; Parrique et al., 2019). Importantly, such limits may be reached long before full employment of labor is achieved – in fact, all high-income nations already transgress them (O’Neill et al., 2018; Parrique et al., 2019). This is not readily apparent only because the impact of excess economic activity is being shifted onto the periphery, marginalized groups (e.g. through unpaid care work) and into the future. The very idea of degrowth is to bring an end to this unjust and unsustainable displacement of the burden created by excess economic activity.

That is why fiscal policy will need to prioritize a reduction of effective demand in destructive sectors, alongside the construction of publicly funded sustainable provisioning systems. Achieving this dual movement through targeted macro-economic management is the key to an MMT-informed degrowth transition.

### JG Solves---AT: Tsuda

#### Tsuda assumes transition planning will be centralized and bureaucratic---this is solved by regional administration and democratic participation.

Timothée Parrique 21, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne, “A response to Kenta Tsuda: Welcome to degrowth,” Timothée Parrique, 9/8/21, https://timotheeparrique.com/a-response-to-kenta-tsuda-welcome-to-degrowth/

Questions of policy design and transition management

“What does the administration of a planned contraction look like?” (p.119). Kenta Tsuda complains about the inexistence of “clear administrative proposals.” This is indeed a naïve complaint because there are many. In my PhD dissertation, I counted a total of 232 policy proposals in the degrowth literature. If anything, the problem of degrowth is not that it lacks proposals but that it has too many of them. In the third part of my dissertation, which I titled “Recipes for degrowth,” I tried to articulate these changes together, ending up with a programme made of 9 goals, 32 objectives, and a number of policy instruments. Kenta Tsuda writes a bit fast when he claims that “degrowthers fail to describe how they will administer the managed economic contraction.” There is a growing scholarship on the matter, with events dedicated to this very question like the degrowth conference of Spring 2020 in Vienna, which was themed “Strategies for social-ecological transformation.”

There are good reasons to question the division between degrowth and the Green New Deal that Robert Pollin makes. Several degrowth scholars are actively engaged with the question and have proposed degrowth-oriented Green New Deals. For example, Riccardo Mastini, Giorgos Kallis, and Jason Hickel participated in the crafting of the DiEM25’s Green New Deal for Europe, injecting degrowth policies into the agenda. A year later, the three same authors published A Green New Deal without growth?, a paper arguing that “degrowth policies could be incorporated into a ‘Green New Deal without growth.’” Degrowth does not call for making tabula rasa of every single institution existing today. Rather, it points to a number of instruments in order to make the economy more sustainable, more just, more effective in delivering well-being, and more democratic. The proposed strategy might be different, but these end goals are similar to what you would read in a Green New Deal agenda.

Of course, one should unbundle social policy and environmental protection (here Kenta Tsuda makes the mistake of reducing degrowth to an ecological concern only). But degrowth is about more than just ecological sustainability – only of the four essential features of degrowth, among social justice, democracy, and well-being. There is no silver bullet policy to such a broad agenda; complex and diverse issues require complex and diverse interventions. The diversity of policy goals and instruments in the degrowth literature is a reflection of that approach.

Even though discussing the design of the transition matters, one should be careful that calls for policy precision do not come to be perceived as valid delay for action. It would be a mistake to think that any complex transition should be perfectly crafted on paper before it can start in reality. Degrowth is a political project, not a spaceship. Most of what a democratic transition is about should be figured out during the transition. This is why it is futile to plan an entire itinerary to a distant, precise destination; rather, we should be focusing on how to take the first couple of steps.

For example, the author worries that “any calibration error will have grave consequences. Undershoot, and humanity experiences the strife of contraction but still ends up with an uninhabitable, wasteland Earth. Overshoot and the Earth remains habitable, but with a ‘deadweight loss’ paid in unnecessary human suffering, mostly by the poor, and a foregone alternative future of social investment and scientific developments” (p.118). Here, he falls back into the confusion between degrowth and recession (this comes on top of another prior confusion between GDP growth and living standards). But, in the affluent countries concerned by degrowth, economic growth is no longer coupled with well-being. If fluctuations in GDP have no effect whatsoever on well-being, then where would the “human suffering” come from? Economic growth currently widens inequality, and it has been shown many times that it is possible to degrow and reduce inequality at the same time (2016; 2018; 2020 ; 2021). Besides, let us not forget that many developed countries are already experiencing a lack of growth, the so-called “secular stagnation.” In this situation, the ideal of post-growth (an economy that can thrive without growth) is rather timely.

Another risk of perfectionist decision-making is to confuse the tool with the task. Focusing too much on policy details runs the risk of letting the how question smother the questions of the why and what. It is important to make degrowth administratively viable, but not if it means giving up on what degrowth is about (sustainability, justice, well-being, and democracy). In fact, it is a good thing that degrowth is considered unrealistic. If everyone was on board with it, the degrowth agenda would probably bear little change to the status quo. Degrowthers can be called utopian only because they explore the borders of the unimaginable. They think and act as if it was possible for degrowth to exist and through opposition and brave leaps of social eccentricity, they create the conditions of its own feasibility. Degrowth is, in that sense, an impossible goal but an impossible goal worth having.

Kenta Tsuda points out, with some justice, that the degrowth literature has remained silent about issues of international coordination. “International coordination of degrowth, however, threatens to reproduce the domestic coordination problem within the anarchic dynamics of inter-state politics” (p.122). But this is true for anything. International politics is famously complicated, whether we are talking about international trade, the management of the Euro, or the mitigation of climate change. But again, degrowth is not a great reset of everything. There is no need to launch a whole new process leading to a “Global Degrowth Pact,” as the author suggests. Instead, let us use the mechanisms that already exist: the Sustainable Development Goals, the Paris Agreement, the Biodiversity Convention, the Convention on Mutual Administrative Assistance in Tax Matters, the European Green Deal, etc. See degrowth as a more ambitious set of objectives – and sometimes a more radical design – for each of these initiatives (compare for the example the European Green Deal with the more radical, degrowth-inspired Green New Deal for Europe).

The risks that the author foresees, degrowth falling “into a spiral of bureaucratic mismanagement and international conflict,” are unjustified. If anything, imagine how less bureaucratic and conflictual the global economy would be if rich countries decided to limit their consumption of natural resources, thus putting an end to the patterns of neo-colonial extractivism and unequal exchange that enable the “imperial mode of living” of a minority of rich people.

### AT: Sustainability---Impact Addon

#### Trainer says growth causes resource wars---those go nuclear

Conor Finnegan 20, State Department reporter/producer at ABC News, “Hot spots to watch: What crises could explode in 2021,” ABC News, 12/31/20, https://abcnews.go.com/International/hot-spots-watch-crises-explode-2021/story?id=74607383

The world was on lockdown for most of 2020. But from the Caucasus to the Horn of Africa to the Himalayas, several conflicts, some frozen for decades, erupted in violence.

With the coronavirus pandemic and the ensuing economic crisis, tensions that have simmered are threatening to flare up further in 2021, especially as humanitarian need skyrockets, governments and aid groups face budget shortfalls, and climate change increasingly forces folks to flee or fight over resources.

Here are the top conflicts or issues that could burst into all-out crises in 2021.

Nuclear arms race: From rogue states to regional tensions

At the start of 2020, the Bulletin of the Atomic Scientists made a dramatic announcement -- its famed Doomsday Clock was the closest to midnight it's ever been, with the threats of nuclear war and climate change growing ever more acute.

"National leaders have ended or undermined several major arms control treaties and negotiations during the last year, creating an environment conducive to a renewed nuclear arms race, to the proliferation of nuclear weapons, and to lowered barriers to nuclear war," the group said in January.

Twelve months later, the last nuclear arms control pact between the U.S. and Russia is weeks from expiry, with no plans to extend it in sight. China continues to develop its nuclear arsenal, possibly even doubling it in the next decade, according to the Pentagon. It's also clashed high in the Himalayas with its nuclear-armed neighbor India, which in turn spilled blood with nuclear-armed rival Pakistan over the disputed territory Kashmir.

As the global infrastructure to constrain nuclear weapons wanes, any one of these could turn into a flashpoint next year, and that's without even mentioning the rogue nuclear power states North Korea and Iran -- both of which are likely to test the incoming Biden administration.

After four years of President Donald Trump's policies, North Korea has more nuclear weapons and enhanced ballistic missile capability, which it may show off with a test launch early in President-elect Joe Biden's term to try to garner some attention and leverage, according to analysts. While the likelihood of a "fire and fury" response will diminish after Trump's departure, the risk of a skirmish spiraling into all-out war remains real, according to analysts.

### AT: Sustainability---Laundry List

#### Chemicals are existential and a threat multiplier

Julian Cribb 21, Fellow of the Australian Academy of Technological Sciences and Engineering, “10 Preventing Catastrophe,” Earth Detox: How and Why We Must Clean Up Our Planet, 1st ed., Cambridge University Press, 07/29/2021, pp. 246–252 DOI.org (Crossref), doi:10.1017/9781108946414

Though larger than global warming in emissions and more deadly than either famine or pandemic disease, the poisoning of Earth is but one of ten catastrophic threats brought on humanity by our own numbers, actions and heedless overuse of our Planet’s resources. It does not stand alone as an issue but is an interconnected part of a growing menace to the very existence of the human species.

To make the distinction clear, a catastrophic risk is one that threatens all or most of civilisation with disaster; an existential risk is one that threatens our actual survival as a species. Of the ten, only two - climate change and nuclear weapons - qualify as specific existential threats to humanity in that, on their own, they can wipe us all out. The other eight, such as pandemic disease, food insecurity, ecological devastation and global poisoning, represent catastrophic risks to civilisation at large. Taken together, however, all ten risks constitute the greatest existential emergency ever to face humans in the million years of our tenure on the Planet. Global poisoning with chemicals is not merely a catastrophic threat to human health and wellbeing; it also gravely undermines our fitness to survive.

The ten risks are described in Surviving the 21st Century1 along with the science behind them, the causes and what humanity as a whole and we as individuals can do about them. These risks are:

• Decline of key natural resources and an emerging global resource crisis, in water, soils, forests and the oceans especially.

• The widespread decline and collapse of natural ecosystems that support all life, including our own, and the sixth mass extinction of wild animals and plants.

• Global heating, sea level rise and increasing turbulence in the Earth’s climate affecting all human activity, especially our ability to produce food.

• Universal contamination of the Earth system and all life by emitted chemicals - the topic of this book.

• Rising food insecurity, declining nutritional quality and increased risk of conflict.2

• Nuclear weapons and a new global arms race.3

• Megacity collapse, linked to population overgrowth and resource failure.

• The increasing frequency of outbreaks of new and old pandemic diseases generated by human activity.

• The introduction of uncontrolled and dangerous new technologies.

• Widespread delusion and ignorance across society about the scale and nature of the risks we now face, leading to inaction.

The central message of Surviving the 21st Century was that all these risks are interconnected. They cannot be solved on their own, or one by one. To secure the human future, they must all be solved together, in a systemic way, and by methods that make none of them worse. The following commentary explains how the chemical threat interconnects with the nine other risks and points to possible ways forward.

1. Climate change is the largest recognised impact of unrestrained human chemical emissions. It is driven mainly by the burning of fossil fuels, but also by a host of other insults including fertilisers, pesticides, plastics, synthetic textiles, refrigerants, HFCs, PFCs, methane, nitrous oxide, nitrogen trifluoride etc.4 However, warming chemicals account for less than one-quarter of total human chemical emissions, leading to the question: if greenhouse chemicals can cause so much world havoc, how great is the risk from all the other substances released by human activity? Unquestionably, the elimination of climate emissions (involving the closure of the coal, oil and gas sectors and their replacement with renewable energy and other substitutes) will also eliminate the primary source of toxic chemical pollution on the Planet and a major risk to human life and health. It must therefore proceed with added urgency because of the millions of lives now being sacrificed. However, care must also be taken not to simply exchange one form of pollution for another, such as nuclear radiation, toxic mineral processes or new, untested substances. Accelerated action on climate will help significantly to detox the Earth - and accelerated action on global pollution will help limit climate change.

2. The Sixth Extinction of life on Earth has several main drivers, including land clearing (for industrial agriculture), urban expansion, wild harvesting and the poisoning of all wildlife by human chemical emissions, notably pesticides and endocrine-disrupting chemicals. The chemical flood therefore plays a key role in the world ecological crisis and the rendering of Earth less habitable for humans and other animals. The withdrawal of these chemicals from use will not only save millions of human lives but also reduce extinction risk for critical life forms such as insects, which support birds, frogs, fish and other animals. Ecosystems support the wild world in supplying the clean air, water and food which are also indispensable to human survival. It makes no sense to poison them. Reducing the chemical flood will arguably constitute a major step towards ending the Sixth Extinction and restoring the world’s life-giving ecosystems to health.

3. Food security. Chemistry is now intimately interwoven with the production and processing of more than half of humanity’s food supply. Because chemicals are cheap and easy to use, Western agriculture, food processing and packaging have developed an addiction to them which, additively, poses sharply escalating risks to humans, wildlife and to the environment. This has fuelled a dangerous paradox, in which chemicals are key to maintaining a high output of poor quality industrial food, yet are increasingly implicated in both chronic and acute poisoning, and in the rise of lifestyle diseases - among them diabetes, obesity and cancer. It is now imperative to purge the food chain of chemicals with known toxicity to humans and wildlife and replace them with alternative technologies or softer chemistry. The existing model of world food production is unsustainable (as explained in Food or War) and must be replaced by one that consists of (i) regenerative farming, (ii) renewable urban food production and (iii) deep ocean aquaculture. This novel food system will minimise the use of chemicals and will help greatly to detox the Planet. A renewable food supply will also help end the Sixth Extinction and will reduce the threat of war.

4. Nuclear weapons. Chemistry is a fundamental component in the design of materials used to make advanced nuclear weapons and is thus a prime contributor to Armageddon. The only solution is to ban nuclear weapons, along with all the materials and processes by which they are made, and to eliminate all supplies of fissile material, as proposed in the UN Treaty on the Prohibition of Nuclear Weapons. Chemistry can also play a vital role in making these substances safe and recycling them beneficially. However, the ethics involved in the creation of weapons of mass destruction must also be the subject of serious selfexamination by the chemistry profession: doctors do not plan the mass death of humans on a global scale. Some chemists and physicists do - and it is time they were held to account and required by their profession and society to behave in a more humane and ethical manner.

5. Resource scarcity. Growing shortages of soil and clean water, the loss of forests, the decline in global fish stocks and ocean health as well as scarcity of key minerals are all linked in different ways to the chemical flood. Major drivers include industrial agriculture, industrial forestry and fishing, climate change, the universal pollution of fresh waters and the oceans, the poisoning of wildlife including fish; all these sectors depend on or derive from chemistry. The harmful role of chemicals in each of these looming resource crises needs to be clearly mapped and mitigated. On the other hand, the role of chemistry in recycling, in building the global circular economy, in developing safe and sustainable alternative materials, in ending pollution and locking up poisons and in cleaning up contaminated regions needs to be ramped up. This will involve the chemical profession and industry shifting from a harm-inflicting to a healing, regenerative mindset, helped by universal consumer demand to motivate it. Female leadership may be essential to this transition. Consumer support for green chemistry certainly will be.

6. Megacity collapse. Megacities are the fruit of the human population explosion which, aided by modern chemistry in food and medicine, now far exceeds the ability of the Earth to support it.5 Megacities are themselves living far beyond their means. As described in Food or War,6 no megacity can feed itself, and all rely heavily on long, chemical-driven food chains to supply their needs. Failure in those chains, due to climate change, resource depletion and eco-failure, spells disaster for billions of people. The solution is ‘renewable food’ - the adoption of advanced urban food production, which uses almost no artificial chemicals and depends on recycling water and nutrients, and deep ocean aquaculture.

7. Pandemic disease. Pandemic diseases arise chiefly from human destruction of wilderness for industrial agriculture and urban sprawl, combined with the overgrowth in our population. These bring us into close contact with the animal hosts of new and unknown diseases, allowing them to jump species. They then spread by world travel, urbanisation, food chains and human behaviour. Chemistry is involved in all facets of their genesis - and is also deeply engaged in trying to combat them with new drugs, vaccines and protective materials. The role of chemistry in helping to start pandemics has not been deeply considered, and must be, for the sake of preventing new ones in future. Its role in developing safe, sustainable solutions for existing pandemic diseases must be accentuated.

8. Uncontrolled technologies. These include things like the spread of universal surveillance by governments of their citizens, and corporations of their critics and consumers, the adoption of artificial intelligence, killer robots, nanotechnology and the engineering of new life forms.7 All of these are proceeding without public oversight or permission and, like chemicals, are now being released onto the world without control and without due consideration of their larger consequences. Chemistry is an essential input to all of them and so bears moral responsibility for helping to limit the threats they pose to the human future. Universal surveillance (enabled by quantum computers, AI etc.), in particular, can be used to silence concerned citizens and gag scientists who wish to warn about the harms inflicted by the institutions that wield these tools of tyranny. The suppression of scientific truth and free speech has been common practice by the chemicals sector since Minamata. Reform and public transparency are now imperative.

9. Mass delusion. Perhaps the most dangerous element in the ability of human civilisation and our species to survive in future is our capacity for self-delusion - for believing whatever we fancy, in spite of the evidence. This risk is discussed and explained in Surviving the 21st Century. Delusion is the mortal enemy of rationality and truth, and hence of our ability to survive the real threats we face, including the chemical flood. The chemicals sector - along with fossil fuels, tobacco and pharmaceuticals - has been a skilled disseminator of misinformation about chemical risks, and hence a feeder of public beliefs that they are an insignificant or, at worst, a second-order risk to human life. The science flatly contradicts such a view. It is time that based its assessment on independent scientific fact, not on self-serving industrial propaganda, denialism or attempts to distort the science. Only if told the truth will consumers and citizens fully understand the necessity to choose the products that empower clean chemistry and eliminate the substances that will poison generations of humans yet unborn.

In summary, our ability to survive and prosper through the twenty-first century and beyond depends on how successfully we can solve the ten interconnected threats, the gravest existential emergency our species has ever faced.

Humanity’s ability to inflict mass harm on itself has been accelerating for the past hundred years. Worldwide trends in population, industry, politics, warfare, climate, environmental destruction and high technology have delivered an entirely new level of risk, one unseen in history. The risk is global, complex and potentially existential.

The answers lie not only in sound governance and ethical corporate and scientific behaviour but also in the willing combined actions of billions of individuals in their daily lives. Much of our present behaviour has to change - but changing it will bring fresh opportunities for health, prosperity, work and fulfilment.

Together, we now face unarguable proofs that our combined chemical outpouring threatens human civilisation, placing in jeopardy the health, happiness, intelligence and wellbeing of all.

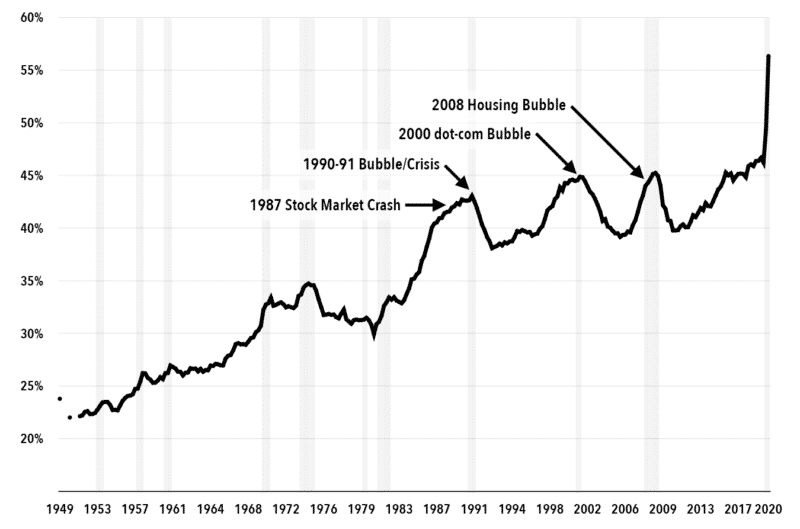
#### Financialization is the fuel for growth---makes collapse inevitable.

John Bellamy Foster 21, American professor of sociology at the University of Oregon and editor of the Monthly Review, “The Contagion of Capital,” Monthly Review, 1/1/2021, https://monthlyreview.org/2021/01/01/the-contagion-of-capital/

Such frenetic speculation naturally carries with it the growing danger of a financial meltdown. At present, the U.S. economy is faced with a stock market bubble that is threatening to burst. Two of the more influential ways of ascertaining whether a financial crisis centered on the stock market is imminent are: (1) the stock price to company earnings ratios (P/E) of stocks, and (2) Warren Buffett’s Expensive Market Rule. The historical average P/E ratio, according to the Shiller Index, is 16. In August 2020, the U.S. stock market was priced at more than twice that, at 35. On Black Tuesday during the 1929 stock market crash, which led to the Great Depression, the P/E ratio had reached 30. The 2000 stock market crash that ended the tech boom of the 1990s occurred when the P/E ratio reached 43.51

According to Buffett’s Expensive Market Rule, the mean average of stock values (measured by Wilshire 5000 market-value capitalization index) as a ratio of GDP is 80 percent. The 2000 tech crash occurred when the stock to income ratio, measured in this way, reached 130 percent, while the 2007 Great Financial Crisis occurred when it reached 110 percent. In August 2020, the ratio was at 180 percent.52

Another key indicator of growing financial instability is the ratio of nonfinancial corporate debt to GDP, depicted in Chart 4. Corporations flush with free cash have taken on debt, available at very low interest rates, in order to further pursue nonproductive ventures such as mergers, acquisitions, and various forms of speculation, using the free cash as flow collateral. In each of the three previous economic crises of 1991, 2000, and 2008, nonfinancial corporate debt reached cyclical peaks in the range of 43 to 45 percent of national income. In 2020, nonfinancial corporate debt in relation to national income reached a record 56 percent. This is a sure sign of a financial bubble stretched beyond its limits.



The entire world economy, apart from China, is now in crisis, with over a million and a half lives lost worldwide to COVID-19 as of the beginning of December, disrupting normal production relations. The International Monetary Fund has projected a -5.8 percent rate of growth in the advanced economies in 2020 and a -4.4 percent rate of growth in the world.53 In these circumstances, there will be no fast recovery from the current capitalist crisis. Heavy storm winds will continue. The U.S. ability to print dollars to stave off financial crises as well as its capacity to devalue its currency so as to increase its exports (thereby reducing the value of dollar reserves held by countries around the world) may both come up against mounting resistance to the dollar system, further hastening the decline of U.S. hegemony. As in other areas, the contagion of capital, which spreads like a virus, ultimately undermining its own basis, is operative here.54 Washington’s attempt to create trade pacts that will ensure the continued dominance of U.S.-centered global commodity chains is running into increasing competition from Beijing. The 2020 Regional Comprehensive Economic Partnership, the largest trade bloc in the world, accounting for around 30 percent of the global economy, has China as its center of gravity.

Faced with economic stagnation, periodic financial crises, and declining economic hegemony, and confronted with rapid Chinese growth, the United States is heading toward a New Cold War with China. This was made clear in the November 2020 U.S. State Department report, The Elements of the China Challenge, accusing the “People’s Republic of China of authoritarian goals and hegemonic ambitions.” The State Department report proceeded to outline a strategy for the defeat of China by targeting the Chinese Communist Party (CCP), exploiting the CCP’s economic and other “vulnerabilities.”55

Here, the chief economic weapon of the United States is its dominance over world finance. Former Chinese Finance Minister, Lou Jiwei, recently indicated that the United States is preparing to launch a “financial war” against China. U.S. attempts at “the suppression of China” by financial means under a Joe Biden administration, he says, “will be inevitable.” Under these circumstances, Lou insists, China’s earlier goals of internationalizing its currency and initiating full capital account convertibility, which would lead to the loss of its control of state finance, are “no longer safe options.” If Washington were to use its power over the world financial system to smother Chinese growth, Beijing, according to Chen Yuan, a former Chinese central bank deputy governor, could be forced to weaponize its holdings of U.S. sovereign debt (totaling $1.2 trillion) in response. This is viewed as the financial equivalent of nuclear war. A financial (not to mention military) war between the United States and China, driven by U.S. attempts to shore up its declining economic hegemony by attempting to derail its emerging rival, could well spell utter disaster for the global capitalist economy and humanity as a whole.56

The Boundary Line and the Contagion of Capital

The crisis of the U.S. system and of late capitalism as a whole is one of overaccumulation. Economic surplus is generated beyond what can profitably be absorbed in a mature, monopolistic system. This dynamic is associated with high levels of idle capacity, the atrophy of net investment, continuing slow growth (secular stagnation), enhanced military spending, and financial hyperexpansion. The inability of private investment (and capitalist consumption) to absorb all of the surplus actually and potentially available, coupled with government deficit spending, leads to growing amounts of free cash in the hands of corporations. The result is the rise of a system of asset speculation that partially stimulates the economy due to the wealth effect (increases in capitalist consumption fed by a part of the increased returns on wealth), but which is unable to overcome the underlying tendency toward stagnation.57

Hence, monopoly-finance capital of today is a deeply irrational system, in which money is seen as begetting more money without the mediation of production, or what Marx characterized as M-M’ (Money-Money + Δm or surplus value).58 “The viability of today’s money manager capitalism,” as the heterodox economist Hyman Minsky called it,

depends upon not having a serious depression: the continued absence of a serious depression fosters experimentation with portfolio managing techniques that increases the likelihood of system threatening crises, that is, increases the likelihood of depressions. There is a basic contradiction in money manager capitalism which makes continued success ever more dependent upon an apt structure of supportive government interventions. Money manager capitalism rests upon the power of government to prevent a sharp decline in aggregate business profits.… We can expect future crises to be met with some form of ad hoc intervention which will in part reflect an unwillingness by policy makers to appreciate that once again capitalism has changed.59

A rational strategy with which to escape this trap—if only partially—would be to increase the direct U.S. governmental role in investment and consumption in order to address the multiple crises of society, including public spending in response to: (1) the climate emergency; (2) the public health crisis; (3) the shortage of adequate housing for much of the population; (4) the deterioration of the public education system under neoliberalism; (5) the absence of a national mass transit system, and so on. Yet, for the government to enter directly into such areas would involve crossing the private sector-government boundary line, which ensures the present near-complete dominance of the economy by the private sector, a phenomenon first critically diagnosed by Marxist economists Paul A. Baran and Paul M. Sweezy in Monopoly Capital in 1966.60 As Medlen writes, “the institutional arrangements for profit-seeking investment are simply taken for granted as a boundary line that is not to be violated.”61

So strict is the boundary line in the U.S. economy that outside of the Tennessee Valley Authority, as well as various municipal utilities and land leases, government-owned productive facilities cannot be said to produce internal revenues sufficient to compensate for costs of production. “This is primarily because the government, outside a considerable land mass, the public school system, the U.S. Postal Service and toll-free roads, owns essentially nothing.”62 The bulk of federal government discretionary spending goes to the military, which constitutes a huge subsidy to private capital while avoiding any intrusions on the private sector. Meanwhile, the privatization of public health infrastructure and public education is further pushing the boundary line in the direction of the complete dominance of a private sector already prone to overaccumulation and the contagion of capital.

A little more than forty years ago in “Whither U.S. Capitalism?,” Sweezy, writing in Monthly Review, questioned the then common view that the United States, caught in economic stagnation, was headed inevitably to “an American version of the corporate state, authoritarian and repressive internally, increasingly militaristic and aggressive externally.”63 His reasoning is worth recalling today:

There are at least two problems with this “solution” to the crisis of U.S. capitalism. First, it assumes that because the working class has never yet organized itself for effective independent political action it never will in the future either. In my view this reflects a simplistic view of the history of class struggles in the United States and quite unjustifiably rules out the emergence of new patterns of behavior and forms of struggle. Second, it assumes that the capitalists will be united behind a fascist-type policy of repression, and this seems to me doubtful too. Not only is a strategy of this kind costly to large elements of the middle and upper classes, as the whole history of fascism shows, but even more important, it is no solution at all to the real problems of U.S. capitalism. The basic disease of monopoly capitalism is an increasingly powerful tendency to overaccumulate. At anything approaching full employment, the surplus accruing to the propertied classes is far more than they can profitably invest. An attempt to remedy this by further curtailing the standard of living of the lower-income groups can only make things worse. What is needed, in fact, is the exact opposite, a substantial and increasing standard of living of the lower-income groups, not necessarily in the form of more individual consumption: more important at this stage of capitalist development is a greater improvement in collective consumption and the quality of life.64

Sweezy followed this up with the notion of building a “cross-class alliance” between those suffering most from monopoly capitalism and the more far-seeing elements of the ruling class, a kind of new New Deal, but with the working class as the organizing and hegemonic force. This was consistent with a political praxis emphasizing protecting the population in the immediate present while working toward the long-run revolutionary reconstitution of society at large.

More than four decades later, in 2021, the basic conditions are similar, if more serious and threatening. The current struggle for a People’s Green New Deal, based on a just transition, is a call for a cross-class movement to protect humanity as a whole, one which, however, can only be successful by going against the logic of capital and establishing the basis for a new society geared to substantive equality and environmental sustainability: the historical struggle for socialism. If the danger of “a fascist-type policy of repression” of the kind that Sweezy pointed to has reemerged in the twenty-first century in the context of the contagion of capital, so has a new socialist movement from below aimed at ensuring a world of sustainable human development. Predictions as to the future are meaningless in this context. The point is to struggle.

### AT: Sustainability---Framing

#### Framing issues for sustainability:

#### 1) BURDEN OF PROOF---innovation has to work every time to creates sustainability---failing just once causes collapse.

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

This narrative relies heavily on the claim that technology will save us, in one way or another. For some, it is a simple matter of switching the global economy to renewable energy and electric cars; once we do that, there’s no reason we can’t keep growing for ever. After all, solar and wind power are getting cheaper all the time, and Elon Musk has shown that it’s possible to mass-produce storage batteries at a rapid clip. For others, it’s a matter of ‘negative-emissions technologies’ that will pull carbon out of the atmosphere. Still others bank on the hope of enormous geo-engineering schemes: everything from blocking out the sun to changing the chemistry of the oceans. Of course, even if these solutions succeed in stopping climate change, continued growth will still drive continued material use, and continued ecological breakdown. But here too some insist that this is not a problem. Efficiency improvements and recycling technologies will allow us to make growth ‘green’.

These hopes have been touted by some of the richest and most powerful people in the world, including presidents and billionaires. The ecological crisis is no reason to start questioning the economic system, they say. It’s a comforting narrative, and one I myself once clung to. But the more I have explored these claims, the more it has become clear to me that to take this position requires accepting an extraordinary risk. We can choose to keep shooting up the curve of exponential growth, bringing us ever closer to irreversible tipping points in ecological collapse, and hope that technology will save us. But if for some reason it doesn’t work, then we’re in trouble. It’s like jumping off a cliff while hoping that someone at the bottom will figure out how to build some kind of device to catch you before you crash into the rocks below, without having any idea as to whether they’ll actually be able to pull it off. It might work … but if not, it’s game over. Once you jump, you can’t change your mind.

If we’re going to take this approach, the evidence for it had better be rock-solid. We’d better be dead certain it will work.

#### Worse, innovation has to constantly accelerate to sustain growth---that’s highly unlikely

--“Inductivist Turkey” quote by Lord Bertrand Russel – “This turkey found that – on his first morning at the turkey farm – he was fed at 9 a.m. However, being a good inductivist, he did not jump to conclusions. He waited until he had collected a great number of observations on the fact that he was fed at 9 a.m., and he made these observations under a wide variety of circumstances, on Wednesdays and Thursdays, on warm days and cold days, on rainy days and dry days. Each day, he added another observation statement to his list. Finally, his inductivist conscience was satisfied and he carried out an inductive inference to conclude, “I am always fed at 9 a.m.”. Alas, this conclusion was shown to be false in no uncertain manner when, on Christmas eve, instead of being fed, he had his throat cut. An inductive inference with true premises has led to a false conclusion”.

--added “enough” for readability

Umberto Mario Sconfienza 20, Goethe University Frankfurt, “Incomplete Ecological Futures,” World Futures, vol. 76, no. 1, Routledge, 01/02/2020, pp. 17–38

After problems. Often efficiency savings resulting from productivity growth “rebound” and are put toward consumption (Alcott, 2005), not reduced use of resources, because the demand for material goods and services can never saturate in a capitalist economy. Even the service economy, which looks lighter, requires a massive amount of energy to power internet servers. According to a recent research, Bitcoin emissions alone could push global warming above 2C in the next two decades (Mora et al., 2018).

Ecomodernist scholars urge that the processes of modernization should be accelerated. Urbanization should be encouraged because cities use fewer resources per unit of product and are overall more productive. It makes sense for ecomodernist to push in this direction: the economies of scale afforded by the urbanization process reduce the ecological footprint of city dwellers while the positive returns to scale, for example in terms of patents, economic growth, numbers of encounters between people fuel the process of innovation necessary to decouple the economy. Whether this is a fair and theoretically sound analysis of the processes of modernization or whether the ecomodernist project is feasible at all is beyond the scope of the present section – Szerszynski (2015) and Kallis (2018) provides a sharp rebuke of these aspects of ecomodernist thinking –, however, even if received uncritically and flatly implemented, the ecomodernist project has important implications for its social stability and environmental sustainability. According to Bettencourt, Lobo, Helbing, Kuhnert, and West (2007), the fact that the system of wealth creation and innovation of cities produce positive returns to scale – i.e. they scale superlinearly – requires the pace of life “to increase with size at a continually accelerating rate to avoid stagnation and potential crisis” (Bettencourt et al., 2007, p. 7306). In other words, innovations need to be introduced at an always faster rate to stave off what is called a finite time singularity, i.e. the situation in which a certain output – GDP, population, the number of patents – becomes infinite in a finite amount of time. This is an unsustainable situation which would require an infinite amount of energy; if not [enough] innovations are introduced, the system collapses (West, 2017). Coming back to more prosaic manifestations of these phenomena, the pace of life accelerates in bigger cities – e.g. people walk faster in bigger cities (Wirtz & Ries, 1992) – and we now witness more than one round of innovations within our lifetime, to the point that often the workforce of a company needs to be retrained throughout their active working years to perform a similar job. The fact that human ingenuity has so far succeeded to stave off the finite time singularity does not mean that it will continue to do so in the future (especially considering that innovations need to be introduced at an always faster rate); to believe so would be to commit the well-known fallacy of the inductivist turkey.

While the metaphor of the rocket pushing through the atmosphere is alluring (see section 2) – after all it requires us to simply continue to power the engines to exit the condition of unsustainability – it is also a misleading one. Contrary to rocket science, it is difficult to predict how long the phase of unsustainability will last if we pursue the ecomodernist vision; the increasing pace of life and the faster rate of innovation might actually stretch this period.

#### 2) UNIQUENESS---innovations are slowing down

Parrique et al. 19, Timothée Parrique, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne; Jonathan Barth, ZOE.Institute for Future-Fit Economies; François Briens, Independent, Informal Research Centre for Human Emancipation; Christian Kerschner, Department of Sustainability, Governance, and Methods, MODUL University Vienna, Austria, and the Department of Environmental Studies, Masaryk University, Brno, Czech Republic; Alejo Kraus-Polk, University of California; Anna Kuokkanen, Lappeenranta-Lahti University of Technology; Joachim H. Spangenberg, Sustainable Europe Research Institute (SERI Germany), “Decoupling Debunked,” July 2019, European Environmental Bureau, https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

Many more ambitious scenarios can be imagined,39 but the message is already clear: relying only on technology to mitigate climate change implies extreme rates of eco-innovation improvements, which current trends are very far from matching, and which, to our knowledge, have never been witnessed in the history of our species. Such an acceleration of technological progress appears highly unlikely, especially when considering the following elements:

First, global carbon intensity improvement has been slowing down since the turn of the century, from an average yearly 1.28% between 1960 and 2000 to 0% between 2000 and 2014 (Hickel and Kallis, 2019, pp. 8–9). Narrowing the scope to high-income OECD countries only, where most innovations are developed, the improvement rate of CO2 intensity still declines from 1.91% (1970-2000) to 1.61% (2000-2014), which is a long way from matching appropriate levels to curb emissions to a 2°C target, let alone to 1.5°C.

This empirical observation is nothing like a surprise with regards to the theory. Technological innovation is limited as a long-term solution to sustainability issues because it itself exhibits diminishing returns (Reason 1). Tracking the number of utility patents per inventor in the US over the 1970-2005 period, Strumsky et al. (2010) provide evidence that the productivity of invention declines over time, including in the sectors such as solar and wind power as well as information technologies (which are often acclaimed for their innovative potentials). “Early work […] solves questions that are inexpensive but broadly applicable. [Then] questions that are increasingly narrow and intractable. Research grows increasingly complex and costly […]” (ibid. 506). Looking at total factor productivity changes from 1750 to 2015, Bonaiuti (2018) argues that humanity has entered an overall phase of decreasing marginal returns to innovation.

#### 3) NET EFFECTS---some innovations are ecological, but most aren’t---that overwhelms

Parrique et al. 19, Timothée Parrique, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne; Jonathan Barth, ZOE.Institute for Future-Fit Economies; François Briens, Independent, Informal Research Centre for Human Emancipation; Christian Kerschner, Department of Sustainability, Governance, and Methods, MODUL University Vienna, Austria, and the Department of Environmental Studies, Masaryk University, Brno, Czech Republic; Alejo Kraus-Polk, University of California; Anna Kuokkanen, Lappeenranta-Lahti University of Technology; Joachim H. Spangenberg, Sustainable Europe Research Institute (SERI Germany), “Decoupling Debunked,” July 2019, European Environmental Bureau, https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

To sum up, technology is no panacea. It is indeed impossible to predict what the future holds in terms of innovations over the long term. Yet, the point is, that reasons to be sceptical about the potential for technological change to foster the type of decoupling we described as necessary are multiple and serious. First, many technologies that could have severed part of the link between GDP and environmental pressures have been here for several decades now with only minimal effects. More importantly, all innovations do not go in the direction of more ecological sustainability. In a capitalist and growth-oriented economy, innovation is most often strongly dependent on profit-making opportunities, hence partly oriented to this aim. In such a context, most innovations may result in GDP increase but only a few of them might help mitigate environmental pressures. Future technological changes may perhaps bring some additional improvements, provided these are not cancelled by rebound effects (cf. Reason 2) and provided they do not result in problem shifting (cf. Reason 3). Past and current paces of technological evolutions are clearly at odds with the urgent and radical changes that the environmental crises call for and declining marginal rates of improvement (cf. Reason 1) give little reason for optimism about the future.

### AT: Sustainability---AT: Decoupling---Short

#### No decoupling---bunch of warrants

Timothée Parrique et al. 19, Timothée Parrique, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne; Jonathan Barth, ZOE.Institute for Future-Fit Economies; François Briens, Independent, Informal Research Centre for Human Emancipation; Christian Kerschner, Department of Sustainability, Governance, and Methods, MODUL University Vienna, Austria, and the Department of Environmental Studies, Masaryk University, Brno, Czech Republic; Alejo Kraus-Polk, University of California; Anna Kuokkanen, Lappeenranta-Lahti University of Technology; Joachim H. Spangenberg, Sustainable Europe Research Institute (SERI Germany), “Decoupling Debunked,” July 2019, European Environmental Bureau, https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

> Discussing decoupling requires using a rigorous analytical framework. Depending on the indicators considered to account for economic activities and environmental pressures as well as the range of their evolution, decoupling can be characterised in different ways. It can be global or local, relative or absolute, territorial- or footprint-based, happen over a short or a long period of time, and last but not least, it should be put in perspective with relevant environmental thresholds, political targets and the global socio-economic context, as to assess its adequacy in magnitude taking into account equity considerations.

> The validity of the green growth discourse relies on the assumption of an absolute, permanent, global, large and fast enough decoupling of economic growth from all critical environmental pressures. The literature reviewed clearly shows that there is no empirical evidence for such a decoupling currently happening. This is the case for materials, energy, water, greenhouse gases, land, water pollutants, and biodiversity loss for which decoupling is either only relative, and/or observed only temporarily, and/or only locally. In most cases, decoupling is relative. When absolute decoupling occurs, it is observed only during rather short periods of time, concerning only certain resources or forms of impact, for specific locations, and with very small rates of mitigation.

> There are at least seven reasons to be sceptical about the occurrence of sufficient decoupling in the future. Each of them taken individually casts doubt on the possibility for sufficient decoupling and, thus, the feasibility of “green growth.” Considered all together, the hypothesis that decoupling will allow economic growth to continue without a rise in environmental pressures appears highly compromised, if not clearly unrealistic.

1 Rising energy expenditures. When extracting a resource, cheaper options are generally used first, the extraction of remaining stocks then becoming a more resource- and energy-intensive process resulting in an increase in total environmental degradation per unit of resource extracted.

2 Rebound effects. Efficiency improvements are often partly or totally compensated by a reallocation of saved resources and money to either more of the same consumption (e.g. using a fuel-efficient car more often), or other impactful consumptions (e.g. buying plane tickets for remote holidays with the money saved from fuel economies). It can also generate structural changes in the economy that induce higher consumption (e.g. more fuel-efficient cars reinforce a car-based transport system at the expense of greener alternatives, such as public transport and cycling).

3 Problem shifting. Technological solutions to one environmental problem can create new ones and/or exacerbate others. For example, the production of private electric vehicles puts pressure on lithium, copper, and cobalt resources; the production of biofuel raises concerns about land use; while nuclear power generation produces nuclear risks and logistic concerns regarding nuclear waste disposal.

4 The underestimated impact of services. The service economy can only exist on top of the material economy, not instead of it. Services have a significant footprint that often adds to, rather than substitute, that of goods.

5 Limited potential of recycling. Recycling rates are currently low and only slowly increasing, and recycling processes generally still require a significant amount of energy and virgin raw materials. Most importantly, recycling is strictly limited in its ability to provide resources for an expanding material economy.

6 Insufficient and inappropriate technological change. Technological progress is not targeting the factors of production that matter for ecological sustainability and not leading to the type of innovations that reduce environmental pressures; it is not disruptive enough as it fails to displace other undesirable technologies; and it is not in itself fast enough to enable a sufficient decoupling.

7 Cost shifting. What has been observed and termed as decoupling in some local cases was generally only apparent decoupling resulting mostly from an externalisation of environmental impact from high-consumption to low-consumption countries enabled by international trade. Accounting on a footprint basis reveals a much less optimistic picture and casts further doubt on the possibility of a consistent decoupling in the future.

> This report highlights the need for a new conceptual toolbox to inform and support the design and evaluation of environmental policies. Policy-makers have to acknowledge the fact that addressing environmental breakdown may require a direct downscaling of economic production and consumption in the wealthiest countries. In other words, we advocate complementing efficiencyoriented policies with sufficiency policies, with a shift in priority and emphasis from the former to the latter even though both have a role to play. From this perspective, it appears urgent for policy-makers to pay more attention to and support the developing diversity of alternatives to green growth.

### AT: Sustainability---AT: Decoupling---Long

#### Decoupling’s wrong:

#### It’s empirically disproven for each impact---that’s in the overview. Losing any one means growth’s unsustainable AND existentially threatening.

#### Even if it’s theoretically possible, it’s too slow---once climate feedbacks are crossed, warming runs away, regardless of decoupling---that’s Marques.

#### Robust theoretical evidence disproves it:

#### 1) JEVONS PARADOX---efficiency gains are self-defeating---under growth, savings are reinvested to acquire more capital, which net increases throughput. That’s Marques.

#### Best computer modeling AND empirics prove rebounds:

#### a) Locally

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

When faced with this data, proponents of green growth double down. That’s all in the past, they say. Just because it hasn’t been done before doesn’t mean it’s not possible. We can still change our future direction. We just need to roll out the right technology and the right policies. Governments can impose taxes on resource extraction while at the same time investing in efficiency improvements. Surely this will shift patterns of consumption towards goods that are less resource intensive? People will spend their money on movies and plays, for example, or on yoga and restaurants and new computer software. So GDP will continue growing for ever while resource use declines.

It’s a comforting thought, and it sounds reasonable enough. Fortunately, we now have the evidence to test whether it holds up. Over the past few years scientists have developed a number of models to determine the impact of policy changes and technological innovation on material use. And the results are quite surprising.

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The first study was published in 2012 by a team of scientists led by the German researcher Monika Dittrich.29 The group ran a sophisticated computer model showing what would happen to global resource use if economic growth continued its current trajectory, at about 2 to 3% a year. The scientists found that human consumption of materials would rise at exactly the same rate as GDP. Using current data, that means hitting over 200 billion tons by 2050 – four times over the safe boundary. Disaster.

Then the team re-ran the model to see what would happen if every nation in the world immediately adopted best practice in efficient resource use – an extremely optimistic assumption. The results improved: resource consumption rose more slowly. But it still rose. When resource use rises more slowly than GDP, that’s called relative decoupling. But it’s a far cry from the sufficient absolute decoupling we need. So, no green growth.

In 2016, a second team of scientists tested a different scenario: one in which the world’s nations all agreed to go above and beyond existing best practice.30 In their best-case scenario, they assumed a tax that would raise the price of carbon to $236 per ton (which in turn raises the costs of material extraction and transportation), and imagined technological innovations that would double the efficiency with which we use resources. The results were almost exactly the same as in Dittrich’s study. Even under these stringent conditions, resource use keeps going up. No absolute decoupling, and no green growth.

Finally, in late 2017 the UNEP – an institution that once eagerly promoted green growth theory – weighed in on the debate.31 It tested a scenario with carbon priced at a whopping $573 per ton, slapped on a resource extraction tax, and assumed rapid technological innovation spurred by strong government support. The results? Resource use still goes up, nearly doubling by the middle of the century. As these results trickled out, UNEP had no choice but to change its position, admitting that green growth was a pipe dream: absolute decoupling of GDP and material use is simply not possible on a global scale.

What’s going on here? What explains these bizarre results?

The thing about technology

Back in 1865, during the Industrial Revolution, the English economist William Stanley Jevons noticed something rather strange. James Watt had just introduced his steam engine, which was significantly more efficient than previous versions: it used less coal per unit of output. Everyone assumed that this would reduce total coal consumption. But oddly enough, exactly the opposite happened: coal consumption in England soared. The reason, Jevons discovered, was that the efficiency improvement saved money, and capitalists reinvested the savings to expand production. This led to economic growth – and as the economy grew, it chewed through more coal.

This odd result became known as the Jevons Paradox. In modern economics, the phenomenon is known as the Khazzoom-Brookes Postulate, named after the two economists who described it in the 1980s. And it doesn’t just apply to energy – it applies to material resources too. When we innovate more efficient ways to use energy and resources, total consumption may briefly drop, but it quickly rebounds to an even higher rate. Why? Because companies use the savings to reinvest in ramping up more production. In the end, the sheer scale effect of growth swamps even the most spectacular efficiency improvements.32

Jevons described this as a ‘paradox’, but if you think about it it’s not particularly surprising. Under capitalism, growth-oriented firms do not deploy new and more efficient technologies just for fun. They deploy them in order to facilitate growth. The same is true at the level of the whole economy. Ask any economist and they’ll tell you: efficiency improvements are good because they stimulate economic growth. This is why we see that, despite constant improvements in efficiency, aggregate energy and resource use has been rising for the whole history of capitalism. There’s no paradox; it’s exactly what economists expect. Rising throughput happens not despite efficiency gains, but because of them. There’s an important lesson here. The notion that continuous efficiency improvements will somehow magically lead to absolute decoupling is empirically and theoretically baseless.

But there’s also something else going on. The technological innovations that have contributed most to growth have done so not because they enable us to use less nature, but because they enable us to use more.

Take the chainsaw, for instance. It’s a remarkable invention that enables loggers to fell trees, say, ten times faster than they are able to do by hand. But logging companies equipped with chainsaws don’t let their workers finish the job early and take the rest of the day off. They get them to cut down ten times as many trees as before. Lashed to the growth imperative, technology is used not to do the same amount of stuff in less time, but rather to do more stuff in the same amount of time.

The steam engine, the cotton gin, fishing trawlers – these technologies have contributed so spectacularly to growth not because money springs forth from them automatically, but because they have enabled capital to bring ever-greater swathes of nature into production. Innovations like containerisation and air freight contribute to growth because they enable goods to be transported from the point of extraction or production to the point of consumption more quickly. This even applies to seemingly immaterial innovations like Facebook’s algorithms, which contribute to growth by allowing advertisers to get people to consume things they otherwise wouldn’t. Facebook isn’t a multi-billion-dollar company because it allows us to share pictures with each other, but because it expands the process of production and consumption.

Once we grasp how this works, it should come as no surprise that despite centuries of extraordinary innovation, energy and resource use keeps going up. In a system where technological innovation is leveraged to expand extraction and production, it makes little sense to hope that yet more technological innovation will somehow magically do the opposite.

#### b) Economy-wide

Brockway et al. 21, School of Earth and Environment, University of Leeds, “Energy Efficiency and Economy-Wide Rebound Effects: A Review of the Evidence and Its Implications,” Renewable and Sustainable Energy Reviews, vol. 141, 05/01/2021, p. 110781

Improved energy efficiency is expected to play a central role in meeting both the goals of the Paris Agreement [1] and the Sustainable Development Goals [2], contributing up to 40% of the envisaged reductions in global greenhouse gas (GHG) emissions over the next two decades [3,4]. However, whilst energy efficiency is firmly embedded as a key mitigation strategy within Integrated Assessment Models (IAMs) [5], there are few signs that the rate of growth of global energy demand is slowing. Indeed, after nine years of slower global economic growth following the 2008 global recession, global primary energy consumption increased by 2.1%/year in 2017 and 2.3%/year in 2018 [6], close to the average of ~2.4%/year over the last 250 years [7]. Between 1971 and 2018, global GDP (in US$2010 constant prices) grew by an average of 3.1%/year [8] while global primary and final energy consumption increased by an average of 2.0%/year and 1.8%/year, respectively [9]. This is relative decoupling, since energy consumption grew more slowly than GDP, but there is no historical global experience of absolute decoupling, where energy use falls while GDP continues to grow.

There is some experience of absolute decoupling at the national level, but only for a limited number of countries (e.g., the UK and Denmark) for relatively short periods of time [10,11]. These examples of absolute decoupling have been partly achieved by ‘offshoring’ domestic manufacturing to other countries [12,13]. In their analysis of 99 countries over the period 1971–2010, Csereklyei et al. [10,14] find relatively stable cross-sectional relationships between per-capita primary energy use (EP) and per-capita constant GDP (Y) exchanged at purchasing power parity (PPP) basis, with an elasticity (of EP with respect to Y) of ~0.7. This relationship implies that richer countries are less energy intensive and that, on average, a 1% increase in per-capita income is associated with a 0.3% decrease in per-capita primary energy intensity (EP/Y). Semieniuk et al. [15] analysed 185 countries over the period 1950–2014 and found an even stronger correlation (Spearman's rank coefficient of 0.86) between per-capita primary energy use and per-capita (PPP) GDP, with an elasticity of 0.89 for most of the sample.

In this context, the global energy scenarios from the International Energy Agency (IEA) [4], the Intergovernmental Panel on Climate Change (IPCC) [16], and other organisations represent a significant departure from the historical trend. These scenarios commonly project low or no growth in energy demand over the next few decades, due to a combination of structural change and the more rapid uptake of energy efficient technologies [15]. Energy demand in lower-income regions is projected to grow slowly, despite the need for large-scale investment in infrastructure and heavy industry [17,18], and in many scenarios this increase is more than offset by reductions in energy demand in high-income regions. For example, a review of 2 °C scenarios from three IAMs (TIAM-Grantham, MESSAGE-GLOBIOM, and WITCH) found average changes in global final energy demand of between +0.2%/year and −0.9%/year in the period from 2020 to 2050 [5]. The top end of this range (+0.2%/year) is only a tenth of the average rate of increase since 1971, while (given the assumption of economic growth continuing at 2–3%/year [19]) the bottom end of the range (−0.9%/year) represents significant levels of absolute decoupling.

Most scenarios also project an immediate acceleration in the rate of decoupling, but there is little evidence that such an acceleration is underway. Indeed, global primary energy intensity fell by only 1.3%/year in 2018, the lowest annual fall for a decade, and the fourth year in a row that the rate of improvement has declined [20]. The common response to this slow rate of progress is to call for rapid implementation of more ambitious energy efficiency policies [20]. However, given that mandatory energy efficiency polices already cover 35% of global final energy use in 2018 [20], it is not certain that a step change in energy efficiency policies would deliver the envisaged reduction in energy consumption.

A failure to achieve the anticipated structural break in the rate of growth of global energy demand could have important consequences. If greater decoupling of energy consumption from GDP is not achieved, it will be necessary to rely more heavily on low-carbon energy supply, carbon capture and storage, and negative emission technologies to meet the Paris Agreement goals. These strategies require ambitious policies, large-scale investment, extensive land use, and significant lead-times – so expanding them further will be politically challenging and will take time to have an effect. Hence, further investigation of the prospects for absolute decoupling, and the possible obstacles to that decoupling, is warranted.

This paper explores one possible explanation for the historical close coupling between energy consumption and GDP, namely that economy-wide rebound effects from improved energy efficiency are larger than is commonly assumed. We use the term ‘rebound effects’ to refer to a variety of behavioural and economic responses to improved energy efficiency, whose net result is to reduce energy savings relative to a counterfactual scenario in which those responses do not occur [21]. If rebound effects are large, absolute decoupling will be more difficult to achieve [22]. Whilst energy rebound research was historically driven by a focus on the energy supply and economic implications of improved energy efficiency [[23], [24], [25]], added recent impetus has been given by the implications for climate change and climate policies [26,27]. We review the evidence on the size of economy-wide rebound effects and explore whether and how such effects are taken into account within the models used to produce global energy scenarios. We argue that: first, the evidence suggests economy-wide rebound effects may erode more than half of the potential energy savings from improved energy efficiency; second, the models used by the IPCC and others take insufficient account of these rebound effects; and third, the resulting scenarios may therefore underestimate the future rate of growth of global energy demand.

1.2. Review outline

There are five elements to this Review (Sections 2–6), leading to the Discussion and Conclusions (Sections 7 and 8). The starting point is Section 2, which compares the historical trend (1971–2018) in global final energy consumption with those projected by 17 selected global energy scenarios (2018–2050). The aim is to establish the historical relationship between final energy consumption and GDP and to identify how this is projected to change in the selected scenarios. We find that many scenarios project a significant break in the relationship between energy use and GDP - thereby raising questions about their plausibility [15]. The remaining sections investigate whether large, economy-wide rebound effects could help explain the historical linkage between energy use and GDP and hence whether these effects could obstruct any future decoupling. Section 3 presents the different definitions of improved energy efficiency, and describes how different types of rebound effects may erode the anticipated energy savings. We clarify the mechanisms contributing to direct, indirect, and macroeconomic rebound effects and show how these combine to create an overall economy-wide rebound effect.

Sections 4 and 5 review the empirical evidence on the size of these economy-wide rebound effects. Section 4 summarises the results from 21 studies that use computable general equilibrium (CGE) models to estimate rebound effects, while Section 5 summarises the results from 12 studies that use a range of other methods. The selected studies were identified from keyword searches in Google Scholar, using the criteria that: a) they estimate rebound effects at the economy-wide level; and b) they explicitly or implicitly include one or more macroeconomic rebound effects. While this is a narrative review rather than a systematic review of the type by Sorrell [21], we include a broad selection of studies in this area,1 which serves to give a representative sample of reported rebound magnitudes, from studies with a broad range of methods and assumptions.

Sections 4 and 5 demonstrate that the majority of empirical studies estimate economy wide rebound effects of 50% or more, suggesting that at least half of the potential energy savings from improved energy efficiency may be ‘taken back’ by various economic and behavioural responses. Section 6 then examines whether and how the mechanisms contributing to these rebound effects are included in the integrated assessment and global energy models used to produce global energy scenarios (seen in Section 2). We demonstrate that the majority of models only include a subset of these mechanisms, thereby creating the risk that they underestimate the size and importance of economy-wide rebound effects.

Section 7 discusses the extent to which the omission of some or all of these mechanisms could lead to over-optimistic projections of the future decoupling of energy consumption from GDP. Finally, Section 8 concludes by highlighting some of the implications for research and energy modelling.

2. Structural breaks in global final energy demand

To establish the nature and scale of the anticipated structural break between historical trends and future projections of global final energy consumption, we collate and compare data from a range of sources. We focus upon final rather than primary energy consumption since this avoids the difficulties created by different conventions for measuring primary energy – which become more important as non-fossil sources form a larger share of the global energy mix [28,29].2

For historical trends over the period 1971–2018, we take global final energy consumption data (in TJ/year) from the IEA's Extended World Energy Balances [9], and historical GDP data (Market Exchange Rate [MER] in US$2010 constant prices) from the World Bank [8]. For projections over the period 2018 to 2050, we take eight scenarios from the IPCC and nine scenarios from other authoritative sources (some scenarios have an end year of 2040).

From the IPCC, we take four scenarios that limit warming to 1.5 °C by 2100 with a >50% probability, and four that meet the 2.0 °C target with >66% probability [[30], [31], [32]]. These scenarios are derived from a number of IAMs and assume different levels of population [33] and different patterns of demographic, political, and economic development -via alternative Shared Socioeconomic Pathways (SSPs) [34].3 They also lead to different atmospheric concentrations of GHGs - the IPCC's Representative Concentration Pathways (RCPs). In addition, we take global energy scenarios from the IEA [4], [35], [36], the International Renewable Energy Agency (IRENA) [37], Greenpeace [38], the US Energy Information Administration (USEIA) [39], bp [40], and Shell [41]. These scenarios are derived from a variety of global energy models and represent a range of outcomes for global average temperature.

We align the GDP projections in these scenarios to our historical data via constant MER values in $US2010 prices4 and the final energy consumption projections to our historical data in TJ. Table 1 summarises the different scenarios, Fig. 1 presents the historical and projected trends in global final energy consumption and GDP, and Fig. 2 indicates the corresponding changes in global final energy intensity.

[TABLE 1 OMITTED]

[FIGURE 1 OMITTED] [FIGURE 2 OMITTED]

The structural break in energy-GDP relationships in many of the model scenarios can be seen in Fig. 1 (final energy demand) and Fig. 2 (annual change of final energy intensity). In 9 of the 15 scenarios, final energy intensity (EF/Y) falls by more than 2.4%/year every year between 2020 and 2030 (Table 1) - more than double the average rate of decline since 1971 (1.2%/year). Nearly all the scenarios imply a structural break in energy-GDP relationships, but the size of this break depends upon the level of ambition of the scenario, the structure of the model, and the assumptions for key parameters and variables.

Three other notable features are apparent. First, as climate targets tighten, the scenarios tend towards absolute decoupling of final energy consumption from GDP. For example, the mean rate of growth of final energy consumption in the IPCC 1.5 °C scenarios is +0.0%/year, while that in the 2.0 °C scenarios is +0.9%/year – which is still only half the average rate of growth since 1971 (+1.8%/year). Second, the annual reductions in global final energy intensity (Table 1) vary from −1.1%/year to −5.2%/year. The IPCC scenarios exhibit the largest reductions (−3.1%/year) versus the other scenarios (−2.0%/year) in the 2020–2030 decade, and these are 2–3 times the average rate of decline in the preceding decade (−0.8%/year). Third, in the period 2020–2030, the rate of decline in energy intensity in the IPCC 1.5 °C scenarios (−4.0%/year) is nearly twice that observed in the 2.0 °C scenarios (−2.2%/year).5

In summary, the structural break observed in many of these scenarios represents a radical departure from the historical trend, both in the rate of growth of final energy consumption and the rate of decline of final energy intensity. The plausibility of this structural break therefore deserves closer attention.

3. Improved energy efficiency and economy-wide rebound effects

The decoupling in the above scenarios is largely the projected result of improved energy efficiency throughout all sectors of the global economy. The scenarios include different types, sources, sizes, and costs of energy efficiency improvement, but these improvements may lead to variety of rebound effects, which may not always be captured by the relevant models. Hence, it is first necessary to define what ‘improved energy efficiency’ means and how it is commonly modelled, and then to clarify how rebound effects can erode the associated energy savings.

3.1. Defining and modelling improved energy efficiency

Energy efficiency is simply the ratio of useful outputs to energy inputs for a specified system – such as a motor, a machine tool, an industrial process, a firm, a sector, or an entire economy. Depending upon the system and the purpose at hand, inputs and outputs may be measured in energy terms, such as heat content or physical work; physical terms, such as vehicle kilometres or tonnes of steel; or economic terms such as value-added or GDP [51]. Energy intensity is the inverse of energy efficiency and is most commonly measured in economic terms. Different energy efficiency measures may be more or less appropriate for different systems and purposes.

Empirical and modelling studies relating to energy efficiency improvements vary in terms of:

1.how they define the numerator and denominator of relevant energy efficiency measures (e.g. first law thermodynamic, second law thermodynamic, physical, economic);

2.the system boundaries to which these definitions apply (e.g. devices, households, firms, sectors, national economies);

3.the methods used to aggregate different energy types (i.e. whether and how differences in energy quality are accounted for [52];

4.the source of improvements in energy efficiency (e.g. exogenous technical change, price-induced substitution, mandatory standards);

5.the cost of achieving those improvements (e.g. zero-cost technical change, high-cost regulatory standards [53]; and

6.whether those improvements control for (or are assumed to be independent of) improvements in the productivity of other inputs, or increases in the utility obtained from other commodities.

Many aggregate economic models simulate the behaviour of an economy by a production function of the form: ; where Y is gross output, K is capital inputs, L is labour inputs, E is energy inputs, M is material inputs, and and are exogenous, time-dependent multipliers representing ‘factor neutral’, ‘capital-augmenting’, ‘labour–augmenting’, ‘energy-augmenting’ and ‘materials-augmenting’ technical change respectively. Technical change is assumed to improve the productivity6 of individual inputs over time (e.g., for ) independently of changes in relative prices. Hence, energy-augmenting technical change should improve aggregate economic-based energy efficiency (), because less energy is required to produce the same level of economic output. Increases in the relative price of energy should also improve aggregate energy efficiency, because this encourages producers to substitute other inputs for energy – but since costs have increased, output may fall. In contrast, technical change improves energy productivity independently of changes in relative prices and without reducing output.7

Energy-augmenting technical change ( is one way of simulating improved energy efficiency, but this is not directly observed and hence is difficult to measure empirically [54]. In contrast, it is straightforward to measure the aggregate economic-based energy efficiency of a sector (), but this depends upon the level and price of each input, the current state of technology, and the level of output, as well as upon how individual inputs are measured and aggregated. In addition, a one-off or ongoing improvement in the productivity of energy inputs ( will lower the price of ‘effective energy’ ( and hence encourage producers to substitute (effective) energy for other inputs – which is one of the mechanisms contributing to the rebound effect [55]. As a result, a 1% improvement in the productivity of energy inputs ( within a firm, sector or economy may not translate to a 1% improvement in the aggregate energy efficiency () of that firm, sector, or economy [56]. Also, changes in aggregate energy efficiency may result from changes in the level, price, and productivity of non-energy inputs, even in the absence of energy-augmenting technical change [56]. Similarly, improvements in energy efficiency at one level of aggregation (e.g., an industrial sector) may not translate to improvements in energy efficiency at a higher level of aggregation (e.g., a national economy) owing to a variety of macroeconomic adjustments – for example, a shift towards more energy intensive goods and services as a consequence of a fall in their relative price. More generally there is no necessary link between improvements in one measure of energy efficiency (e.g.,) and improvements in another measure (e.g.,) at either the same or different levels of aggregation. Since different studies define and measure energy efficiency improvements in different ways and for different levels of aggregation, great care must be taken when comparing and interpreting their results.

3.2. Economy-wide rebound effects

Cost-effective energy efficiency improvements reduce the effective price of energy services, such as heating and lighting, and hence encourage increased consumption of those services, which in turn will partly offset the energy savings per unit of the energy service. This direct rebound effect is well established and is now the subject of a large and growing empirical literature [21,[57], [58], [59]], especially for efficiency improvements by consumers. However, energy efficiency improvements can also trigger indirect and macroeconomic responses and associated rebound effects [59], with consequent impacts on energy consumption throughout the economy (see Appendix B for a summary of the different components of the direct, indirect and macroeconomic rebound effects).

For example, the savings in gasoline consumption from using fuel-efficient cars may be spent on other goods and services that also require energy to manufacture and use (indirect rebound). Similarly, the widespread adoption of energy efficient cars may reduce gasoline demand and hence gasoline prices, that will in turn encourage increased consumption of gasoline and other energy (macroeconomic rebound) and have secondary impacts in other markets. Both direct and indirect rebound effects are partial equilibrium, since the methodologies employed to estimate them (e.g., input-output models) hold input and commodity prices fixed throughout the economy, and only consider variations in the effective price of the energy service itself. In contrast, the macroeconomic rebound effects are general equilibrium, since the methodologies employed to estimate them (e.g., computable general equilibrium models) allow input and commodity prices to vary throughout the economy. In practice, these different effects occur simultaneously and their net result - the economy-wide rebound effect – is normally expressed as a percentage of the expected economy-wide energy savings, as estimated from a counterfactual scenario where none of these adjustments occur [60,61].

Economy-wide rebound effects are challenging to estimate, but there is growing evidence to suggest they may be large. For example, Saunders [26] uses data over the period 1850–2000 to estimate economy-wide rebound effects in excess of 60% for Sweden, whilst Bruns et al. [62] uses data over the period 1973–2016 to estimate rebound effects of ~100% for the US (both of these studies are reviewed below). Suggestive evidence is also provided by van Benthem [22] who finds that economic growth in developing countries is as energy-intensive as past growth in industrialized countries, despite dramatic improvements in the energy efficiency of individual technologies. The equality in energy intensity suggests that the energy savings from improvements in individual technologies have been offset by other trends, such as a shift toward more energy-intensive patterns of consumption [10,22]. Similarly, Csereklyei et al. [10] show that the long-term decline in regional and global energy intensity is due to countries getting richer, rather from them producing particular levels of wealth with less energy.

#### 2) PROBLEM-SHIFTING---tech required for decoupling will be dual-use, democratizing the means of violence---only degrowth solves

Michael J. Albert 20, doctoral candidate in Political Science at Johns Hopkins University, “The Dangers of Decoupling: Earth System Crisis and the ‘Fourth Industrial Revolution,’” Global Policy, vol. 11, no. 2, 2020, pp. 245–254

Infinite growth on a finite planet: the decoupling challenge

As both its critics and defenders agree, global capitalism as a system relies on continuous compound growth (about 3 per cent per year) for its stability and survival (Lynas, 2011; Smith, 2016). Without growth (and by extension the expectation of future profit), investment dwindles, interest on debt cannot be repaid, unemployment rises, and consumer spending falls, thereby catalyzing a reinforcing spiral of economic contraction. The problem for global capitalism in a context of earth system crisis, then, is how to make this compound growth compatible with climate stabilization and ecological regeneration. This has clearly been a challenge thus far. As Roger Pielke explains: ‘If there is an iron law of climate policy, it is that when policies focused on economic growth confront policies focused on emission reductions, it is economic growth that will win out every time’; therefore, any successful policy ‘must be designed so that economic growth and environmental progress go hand in hand’ (quoted in Lynas, 2011, p. 68). The philosophy known as ‘ecomodernism’, which can be considered the dominant approach to climate policy in the World Bank, OECD, and UNEP, believes these goals can be simultaneously attained by ‘decoupling’ economic growth from resource use and environmental impact. In the words of the Ecomodernist Manifesto:

Intensifying many human activities – particularly farming, energy extraction, forestry, and settlement – so that they use less land and interfere less with the natural world is the key to decoupling human development from environmental impacts … Together they allow people to mitigate climate change, to spare nature, and to alleviate global poverty (Asafu-Adjaye et al., 2015, p. 7).

The ecomodernists distinguish between relative and absolute decoupling: relative decoupling means that ‘human environmental impacts rise at a slower rate than overall economic growth’, whereas absolute decoupling would occur when ‘total environmental impacts … peak and begin to decline, even as the economy continues to grow’ (Asafu-Adjaye et al., 2015, p. 11). Modern technology and urbanization are considered the keys to achieving decoupling, which they claim enable humanity to ‘[use] natural ecosystem flows and services more efficiently’ (Asafu-Adjaye et al., 2015, p. 17). In this way, the ecomodernists not only believe that it is possible to decouple economic growth from CO2 emissions, but that all environmental impacts – including deforestation, biodiversity, soil depletion, air and water pollution, etc. – can decline even as the global economy continues to grow.

There are a number of indicators that ecomodernists and other proponents of decoupling draw upon as evidence for their theoretical claims. First, the ‘domestic material consumption’ indicator, which measures the total material and energy consumption in a given nation-state, shows that GDP has grown faster than total material consumption in rich countries like the United States, with some European countries going further towards absolute decoupling (Pearce, 2012). In particular, ecomodernists highlight trends in wealthier countries toward reforestation, reduced air pollution, plateauing meat consumption, and saturating demand for material-energy intensive goods (e.g. cars) (Asafu-Adjaye et al., 2015). This shift is often attributed to the transition from manufacturing to service-based economies in these countries, which are thought to promote ‘dematerialization’ by relying on less material and energy intensive services to create economic value (Asafu-Adjaye et al., 2015). Ecomodernists also point to steady improvements in the carbon intensity of the global economy (roughly 1.4 per cent per year, though the rate of improvement has slowed in the past 2 years), which has enabled global growth to relatively decouple from CO2 emissions (IEA, 2016). Ecomodernists therefore conclude: ‘taken together, these trends mean that the total human impact on the environment, including land-use change, overexploitation, and pollution, can peak and decline this century’ (Asafu-Adjaye et al., 2015, p. 15).

Unfortunately for the ecomodernists, degrowth scholars and ecological economists have begun to poke holes in their optimistic assessments. Their response can be summarized according to three key counter-arguments: (1) the evidence that ecomodernists provide for relative decoupling is flawed and limited at best; (2) their evidence for the possibility of absolute decoupling is even weaker; and (3) even if absolute decoupling was possible in principle, there is even weaker evidence that this could occur with the necessary speed to stabilize the earth system before reaching irreversible tipping points.

First, claims that rich countries have seen relative or even absolute decoupling of economic growth from domestic material consumption have been shown to focus solely on correlations between national GDP and material throughput while ignoring the material-energetic costs embodied in imported consumer goods. For example, Thomas Wiedmann and colleagues show that while the EU, the US, and Japan have grown economically while stabilizing or even reducing domestic material consumption, a broader analysis of their material footprint embedded in their imports shows that it has kept pace with GDP growth. They conclude that ‘no decoupling has taken place over the past two decades for this group of developed countries’ (Wiedmann et al., 2015, p. 6273). Focusing on the global economy as a whole, Krausmann et al. show that its resource intensity improved over the course of the 20th century, though the early 21st century has seen a faster rate of growing resource consumption than global economic growth (cited in Hickel and Kallis, 2019). Thus, as Kallis and Hickel (Kallis and Hickel, 2019, p. 4; italics added) explain: ‘Global historical trends show relative decoupling but no evidence of absolute decoupling, and twenty-first century trends show not greater efficiency but rather worse efficiency, with re-coupling occurring’.

Second, given the limited evidence for even relative decoupling, it is little surprise that the evidential basis on which claims for the possibility of absolute decoupling rest is even flimsier. In the most comprehensive summary of the modeling evidence to date, Hickel and Kallis (2019) show that even the most optimistic scenarios fail to prove the possibility of absolute decoupling. For example, a modeling study by Schandl et al. (2016) shows that in a ‘high efficiency’ scenario, one that combines a high and rising carbon price plus a doubling in the rate of material efficiency improvement, global resource use grows more slowly (about a quarter the rate of GDP growth) but steadily to reach 95 billion tons in 2050, while global energy use grows from 14,253 million tons of oil equivalent in 2010 to 26, 932 million in 2050. The authors therefore conclude: ‘While some relative decoupling can be achieved in some scenarios, none would lead to an absolute reduction in … materials footprint’ (Schandl et al., 2016, p. 8). A high efficiency scenario modeled by the UNEP comes to even less optimistic conclusions (with global resource use rising to 132 billion tons in 2050), since it incorporates the ‘rebound effect’ in which efficiency improvements lead to increased consumption due to resulting price reductions (Hickel and Kallis, 2019). In short, as they conclude, these ‘models suggest that absolute decoupling is not feasible on a global scale in the context of continued economic growth’ (Hickel and Kallis, 2019, p. 6).

Third, the critics show that even if absolute decoupling (from both emissions and total environmental impact) were possible in principle, this would need to occur fast enough to prevent transgression of ecological tipping points. Just focusing on the climate problem, the 2018 IPCC report claims that emissions must be reduced 7 per cent annually to reach net zero by 2050 in order to achieve the 1.5 C target, whereas they must reduce 4 per cent annually to reach net zero by 2075 for a shot at the 2 degree target (IPCC, 2018, p. 15). However, even under optimistic assumptions (e.g. a near-term implementation of a high and rising carbon price, alongside heroic carbon intensity improvements), studies suggest that annual declines of 3–4 per cent might be the fastest rate possible assuming continued economic growth (Hickel, 2019). Thus, it would most likely be impossible to meet the 1.5 C target in a context of continuous compound growth. While the 2 degree target might be feasible in this context (assuming implementation of a globally coordinated program starting in 2020), many argue that the IPCC’s estimates downplay the existence of positive feedbacks in the earth system (e.g. Steffen et al., 2018), and thus more rapid emissions cuts might be needed even for 2 degrees. On top of this, economic growth must also be decoupled from impacts on other ‘planetary boundaries’ that may have already been overshot, especially land-use change and biodiversity loss (Raworth, 2017). A number of ecologists believe that to bring humanity back into a ‘safe operating space’, total resource consumption should be reduced from roughly 70 to 50 gigatons per year (Hoekstra and Wiedmann, 2014), while a ‘half earth strategy’ should be implemented that protects 50 per cent of the planet’s surface from direct human interference (up from roughly 18 per cent today) (Wilson, 2017), possibly by 2050 to prevent tipping points in biodiversity loss and land-use change (Hickel and Kallis, 2019). Even if these claims are exaggerated, the magnitude of the overall decoupling challenge remains clear. It would mean that total resource consumption and land use needs to shrink, remain stable, or only increase moderately (depending on our assumptions regarding the further stress (if any) that planetary boundaries can handle) even as the total output of the global economy triples by 2060. It is thus not hyperbole to say, as Boris Frankel puts it, that this goal of absolute decoupling is ‘overwhelmingly staggering in its ambition and historical novelty’ (Frankel, 2018, p. 127).

Given the magnitude of the decoupling challenge and limited evidence for even relative decoupling so far, what arguments could believers in the possibility of absolute decoupling in the future possibly turn to? Some would claim that we simply need to ramp up government regulations and planning to accelerate efficiency improvements. However, the Schandl et al. (2016) study cited above shows that even under highly optimistic scenarios in which such policies are globally implemented, absolute decoupling still fails to occur. Others point to the potential of the ‘circular economy’ in which wastes are converted into inputs for other industrial processes across the global economy (e.g. Rockstrom and Klum, 2015). However, only a fraction of total throughput (roughly 29 per cent) can be converted to a circular economy, since agricultural and energy inputs (44 per cent of the total) are irreversibly degraded, while buildings and infrastructure (27 per cent) involve net additions that cannot be recycled until the end of their lifespan (Hickel and Kallis, 2019). Even for the 29 per cent of the economy that is convertible to the circular economy, the reality of entropy means that total recycling is likely to be physically impossible, while additional constraints on re-using other materials (particularly the rare earth minerals in electronic goods) may lower this potential even further (Frankel, 2018).

The best hope for advocates of absolute decoupling, therefore, appears to be a technological revolution that would render projections of potential material-energy efficiency improvement rates obsolete. Indeed, the Schandl et al. (2016, p. 4) study makes ‘very conservative assumptions regarding the development of new technologies’, and thus significantly faster rates of efficiency improvement are possible (at least in principle) via technological breakthroughs. And as Kallis and Hickel acknowledge, ‘we cannot rule out substitutions or technological breakthroughs that will push such limits [to efficiency improvements] so far into the future as to render them irrelevant’ (Hickel and Kallis, 2019, p. 13). The belief that future innovations will in fact enable such breakthroughs is likely responsible for the fact that ecomodernists and other advocates of decoupling remain undeterred by limited evidence to date. Is there any basis for their optimism?

The fourth industrial revolution

While it remains to some extent speculative, there is a wildcard in the pocket of ecomodernists that lends at least a degree of plausibility to their confidence in future decoupling. This is the Fourth Industrial Revolution (FIR): the convergence of technological developments in the fields of nanotechnology, biotechnology, information technology, AI, and 3D printing among others. As noted earlier, it is the convergent and reinforcing nature of these technological trends that lead many to believe that they will deliver exponential breakthroughs in all fields of science and engineering, even catalyzing a transformation that will be ‘unlike anything humankind has experienced before’ (Schwab, 2017, p. 1). Klaus Schwab, the founder and executive chairman of the World Economic Forum, effectively captures the hope that many place in these converging technologies:

We have yet to grasp fully the speed and breadth of this new revolution … think about the staggering confluence of emerging technology breakthroughs, covering wide-ranging fields such as artificial intelligence (AI), robotics, the Internet of things (IoT), autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing. Many of these innovations are in their infancy, but they are already reaching an inflection point in their development as they build on and amplify each other in a fusion of technologies across the physical, digital, and biological worlds (Schwab, 2017, p. 1).

Given the immensity of the decoupling challenge, it seems likely that to sustain economic growth in the coming decades while stabilizing the earth system would require such a technological revolution. And indeed, this is what many ecomodernists anticipate. Stewart Brand (2012, p. 19), for example, affirms the need for environmentalists to embrace these ‘self-accelerating’ technologies, which he claims can be ‘deployed against the self-accelerating problems of world industrialization and against the positive feedbacks in climate itself’. In particular, both Brand (2012) and Lynas (2011) envision an important role for biotechnology and synthetic biology, which they claim will enable the production of more resilient crops with higher yields, clean and renewable biofuels, and microbes engineered to cleanse polluted environments and sequester carbon. Recent breakthroughs in gene editing and DNA synthesis have enabled new techniques for restoring damaged ecosystems, conserving endangered species, improving biological fixation of carbon, developing bio-based materials, and boosting crop yields by enhancing the efficiency of photosynthesis (Maxmen, 2015; Wintle et al., 2017), thereby raising hopes among environmentalists and governments that the emerging ‘bioeconomy’ can help solve sustainability challenges (Synthetic Biology Leadership Council, 2016).

Others focus on the promise of emerging developments in information technology, particularly AI, big data, and IOT – the global network of online devices, sensors, and databases forming a ‘world-spanning information fabric’ (Goodman, 2016, p. 284). For example, a recent report commissioned for the 2018 Global Climate Action Summit highlights the importance of these ‘exponential technologies’ for accelerating the transition to a low-carbon economy. It places particular emphasis on the power of the IOT and machine learning to ‘enable next generation mobility and electric vehicle breakthroughs, improvements in energy and space efficiency for buildings, and electricity generation and storage’, while making cities orders of magnitude more efficient through traffic, energy, and infrastructural optimization (Falk et al., 2018, p. 80). It also highlights the potential of 3D printing to ‘democratize production’ by enabling local communities to print their material and infrastructural needs, thereby making them ‘far less dependent on global supply chains’ (Falk et al., 2018, p. 33). Overall, the authors believe these technologies can fuel a rapid decarbonization and dematerialization of the economy, with IOT and AI-driven efficiency gains alone enabling 15 per cent emissions reductions by 2030, without sacrificing economic growth or rising material standards of living (Falk et al., 2018).

While its technological flowering may not occur for at least another decade or two, nanotechnology may further revolutionize the above fields. For example, inventor and futurist Eric Drexler claims that nanotech:

will increase energy efficiency across a wide range of applications and sometimes by large factors…In ground and air transportation, the accessible improvements include ten-fold reductions in vehicle mass and a doubling of typical engine efficiencies…reductions in the costs of physical capital will lower the cost of new installations of all kinds, facilitating replacement of capital stock at rates that could surpass any in historical experience. (Drexler, 2013, p. 229)

Combined with 3D printing, nanotechnologists claim that ‘personal nanofactories’ will enable any product to be assembled locally, atom by atom, which would bypass energy-intensive supply chains, reduce energy consumption by an ‘order of magnitude’ (Ramsden, 2016, p. 288), ‘essentially eliminate waste’ and overcome scarcity by disassembling and reassembling any atomic assemblage into novel material compounds (Ramsden, 2016, p. 296), and may even enable the rapid creation of a carbon sequestration and storage infrastructure that would ‘return the Earth’s atmosphere to its pre-industrial composition in a decade, and at an affordable cost’ (Drexler, 2013, p. 234).

Whatever the actual potential of these technologies, it is clear that a powerful technological imaginary exists among policy makers, technologists, and economists that contributes to an unshakeable faith in innovation and human ingenuity to solve the decoupling challenge. Degrowth proponents have so far mainly challenged this optimism by emphasizing the limited potential of renewable energy due to its intermittency and high land and raw material demands (e.g. Kallis, 2018). However, this may downplay the (at least theoretical) potential for convergent breakthroughs in nanotechnology, synthetic biology, and AI to vastly improve renewable energy efficiency and storage systems while designing new materials to substitute for depleting minerals (Diamandis and Kotler, 2014). More broadly, while degrowthers have to some extent considered individual FIR technologies (particularly AI and biotechnology) (e.g. Kallis, 2018; Kerschner et al., 2018), they have yet to address their convergent and mutually amplifying character, which leaves them vulnerable to the arguments of techno-optimists.

Of course, the revolutionary promise of these technologies may fail to materialize, and, given the magnitude of the decoupling challenge, degrowth advocates are right to be skeptical. However, due to irreducible uncertainty combined with the ‘exponential’ and ‘revolutionary’ potential of the FIR (Schwab, 2017), even more rigorous critical assessments would always be insufficient in the eyes of the techno-optimists. Therefore, an alternative line of response should also be pursued: what if the FIR does succeed in decoupling economic growth from total environmental impact? What unintended consequences then might this give rise to?3

Dual-use technologies and the democratization of violence

First, we must consider that all these are ‘dual-use technologies’, or technologies with potential both for economic productivity and violence. As Blum and Wittes (2015, p. 2) explain, these technologies are driving a trend referred to as the ‘democratization of violence’ in which the ‘destructive power once reserved to states is now the potential province of individuals’. Rather than simply a matter of creating new individual weapons, Blum and Wittes (2015, pp. 39, 7–8) emphasize that convergent FIR technologies are generating ‘whole technological fields – a series of breakthroughs in basic science and engineering’ that ‘generate creativity in their users to build and invent new things, new weapons, and new modes of attack’. And to compound the problem, while FIR technologies empower individuals to kill and provoke systemic chaos unlike any other time in history, they also empower states to monitor the minute details of private and public life and potentially constrict individual and collective freedoms, while the unprecedented threats enabled by these same technologies will likely reinforce governmental efforts to intensify securitization as deeply as is technologically feasible. Blum and Wittes summarize the emerging predicament as follows:

How should we think about the relationship between liberty and security when we both rely on governments to protect us from radically empowered fellow citizens around the globe and also fear the power those same technologies give to governments? (Blum and Wittes, 2015, p. 13)

Blum and Wittes do not consider how the earth system crisis will intersect with these threats, either as a positive or negative feedback. But it should be clear that, in a world of FIR-driven sustainability solutions, they would inevitably intensify, and it is thus necessary to consider what new problems and governmental responses they would engender.4

Without claiming to exhaustively describe the security risks created by the FIR, I will focus on three emerging areas of concern: biosecurity, cybersecurity, and state securitization, and will then discuss how they may collectively generate a spiral of insecurity and securitization.

Biotechnology and the emerging terrain of biosecurity

To begin with biosecurity, both the promise and peril of biotechnology – particularly the still nascent field of synthetic biology – is its immense creative potential. As a recent report from the National Academies of Sciences (NAS) describes:

synthetic biology is expected to (1) expand the range of what could be produced, including making bacteria and viruses more harmful; (2) decrease the amount of time required to engineer such organisms; and (3) expand the range of actors who could undertake such efforts. (NAS, 2018, p. 4)

For example, manipulating DNA structures in microorganisms can make certain agents more virulent, improve their resistance to antibiotics and vaccines, make them less detectable by already limited surveillance systems, transform harmless microorganisms into deadly ones, and make pathogens more resilient to diverse atmospheric conditions, thus increasing their lifespan (Charlet, 2018; NAS, 2018). At present these capabilities remain limited and dependent on highly advanced techniques and laboratory equipment, which is why most experts believe there have to date been no mass casualty bioterror attacks (NAS, 2018). However, the NAS notes that improvements in synthesis technology have followed a ‘Moore’s Law–like’ curve for both reductions in costs and increases in the length of constructs that are attainable’, and that ‘these trends are likely to continue’ (NAS, 2018, pp. 18–19). Moreover, automated DNA synthesis techniques remove much of the time-consuming and technically difficult aspects of manipulating DNA, further reducing barriers to access (Wintle et al., 2017). And in the future, experts warn that ‘convergent capabilities’ between synthetic biology, information technology, nanotechnology, and 3D printing may enable ‘sudden’ breakthroughs in bio-weaponization (e.g. by improving bio-agent stability and delivery, providing advances aerosolization capability, and accelerating the ‘Design-and-Build’ cycle) (NAS, 2018, p. 87).

The possibilities of bio-weaponization will expand as these techniques diffuse, which are already enabling the formation of a ‘DIYbio’ movement in which amateur scientists, inventors, and others are increasingly ‘capable of doing at home what just a few years ago was only possible in the most advanced university, government or industry laboratories’ (Bennett et al., 2009, p. 1109). The new CRIPSR/Cas9 gene editing technique further expands the range of genomic tinkering available to individuals, which has been widely embraced by the DIYbio community as a powerful tool that ‘makes it easy, cheap, and fast to move genes around – any genes, in any living thing’ (Maxmen, 2015). The capacities of DIY biohackers remain limited in important ways, though the trends described above suggests they will continue to increase as barriers to advanced bio-weaponization fall (NAS, 2018). And while the risks are evident, the democratization of these techniques may also facilitate the diffusion and customization of local solutions to environmental and health challenges while enhancing popular participation in the direction of biotechnological evolution away from transnational corporate dominance (Bennett et al., 2009).

We can therefore say that these emerging technologies pose a unique kind of ‘security dilemma’: while their development and diffusion may strengthen local and global capacities to solve environmental challenges, they may also imperil global security by unleashing uniquely powerful and complex violence capabilities. Synthetic biology is only in its early stages, and governments from the UK to China aim to ‘accelerate [its] industrialization and commercialization’ in order ‘to drive economic growth’ and ‘develop solutions to key challenges across the bioeconomy, spanning health, chemicals, advanced materials, energy, food, security and environmental protection’ (Synthetic Biology Leadership Council, 2016, pp. 13, 4). If calls for emergency action to exponentially expand the green economy indeed accelerate these trends (Falk et al., 2018), then by 2030 (and more so by 2040) we will live in a world where genetically engineered biofuels dramatically increase, genetic tinkering with crop varieties is normalized to enhance agricultural resilience, and gene drives are deployed to control old and new disease vectors intensified by climate change (among other potential applications), which would exponentially expand the number of individuals with biotech expertise and access to the needed equipment. Therefore, while we have yet to experience a catastrophic bioterror attack, rapid advances in synthetic biology are nonetheless creating a ‘black swan waiting to happen’ (Bennett et al., 2009, p. 1110), and the risk is that such black swans could become increasingly ‘normal’ if this technology becomes a key engine of economic growth and green technological innovation.

Cybersecurity in an age of ‘smart everything’

The second key problem with the FIR is that ‘exponential technologies’ deployed to decouple growth from environmental impact will also intensify ongoing cybersecurity threats. Cybercrime has increased to the point of costing the global economy an estimated $500–600 billion per year, while new vulnerabilities in civilian infrastructures continue to be discovered and exploited more quickly than they can be secured (Goodman, 2016). We are thus dealing with an already significant problem, though it remains important to consider how it will deepen in a world reliant on FIR-dependent solutions to the earth system crisis, especially once we take into account the cyber vulnerabilities posed by next generation information systems (Goodman, 2016).

In particular, we must consider the risks associated with the incipient IOT, which is a key component of the solution-set offered by techno-optimists for decoupling economic growth by dramatically improving efficiencies in energy, transportation, and agriculture (Falk et al., 2018; World Economic Forum, 2018). One of the prerequisites of a future renewable energy system capable of providing at least 80 per cent of growing electricity demand would be the creation of national or regional ‘smart grids’ in which energy surpluses in areas with lots of wind and sun at a given time can be transmitted to areas with energy deficits. While this system would itself increase cyber vulnerabilities relative to more modular systems, the efforts of Cisco and others to enhance the efficiency of smart grids via the IOT would intensify these vulnerabilities even more. In this vision, the smart grid would form ‘an intelligent network of power lines, switches, and sensors able to monitor and control energy down to the level of a single lightbulb’, which would be enabled by IOT connected sensors that ‘monitor energy use and manage demand, time shifting noncritical applications like delaying the start of your dishwasher to the middle of the night, when energy is cheaper’ (Diamandis and Kotler, 2014, pp. 169–171). In this way, every connected device – from iPhones and laptops to dishwashers and microwaves – would become a possible point of entry for hackers to the overall network (Goodman, 2016). The IOT is also envisioned as a possible solution to traffic congestion and fuel efficiency for the future fleet of self-driving electric vehicles that are set to (potentially) transform the market over the next decade. While advocates of ‘smart’ cars and ‘smart’ cities are enthusiastic regarding the possibilities for improved energetic and economic efficiency, it would also leave vehicles vulnerable to remote hijacking, as researchers Chris Valasek and Charlie Miller demonstrated in 2014 by taking control of a 2014 Jeep Cherokee (Markey, 2015). Adding further to the IOT-hype, a recent World Economic Forum report proposes deploying it to create ‘precision agriculture’ systems, which could link farms with global positioning systems and weather data collection to monitor water and soil conditions while enabling farms to automatically optimize inputs (World Economic Forum, 2018).

If these IOT powered energy, urban, and agricultural systems come into being, this would constitute an exponential expansion of attack vectors for would-be hackers, whether they come from states, criminal organizations, or non-state terrorist networks. Cybersecurity analyst Mark Goodman effectively captures the scale the problem:

The IoT will be a global network of unintended consequences and black swan events … we cannot even adequately protect the standard desktops and laptops we presently have online, let alone the hundreds of millions of mobile phones and tablets we are adding annually. In what vision of the future, then, is it conceivable that we will have any clue how to protect the next fifty billion things to go online? (Goodman, 2016, pp. 301–302).

In short, while the expansion of cyber vulnerabilities is already stressing if not overwhelming the defense capacities of governments, corporations, and public utilities, it is also practically assured that these vulnerabilities will expand significantly if the global economy relies on smart energy grids and the IOT to maximize energy efficiency and decouple growth from growing resource use.

State securitization and totalitarian dangers

The third key risk domain involves the securitization powers of states. FIR technologies may not qualitatively transform state power individually, though their convergent character could offer immense power to states that are able to systematically harness these capabilities for surveillance and militarization purposes. Unsurprisingly, such capacities are being intensively pursued by leading states. In particular, the US and China appear to be engaged in an AI arms race, with China aiming to create a $150 billion AI industry by 2030 and the Pentagon seeking to triple its AI warfare budget to match China’s ambition (Ashizuka, 2019). Military robotics is also a key field of competition, with worldwide spending tripling between 2000 and 2015 from $2.4 to $7.5 billion, and which some estimate will double again by 2025 (Allen and Chan, 2017). The US has also spent $29 billion on nanotechnology research since 2001, with about 20 per cent of its investments involving military applications (National Nanotechnology Initiative, 2019). A short list of potential military applications includes powerful and lightweight body armor, microscopic and networked nano-bots with capacities for ‘swarm intelligence’, and more compact and powerful chemical and nuclear weapons (Drexler, 2013; National Nanotechnology Initiative, 2019).

The full extent of the capabilities these technologies may unleash cannot be known in advance, though it seems possible that they could become an ‘axial’ capability of states. As Deudney (2007) describes, an axial capability is one that can dominate an entire system due to its unique character. While FIR technologies may not offer axial capabilities individually, their convergent character is such that they could collectively offer an axial advantage to states able to systematically harness their potential. This could take the form of a globally networked and nano-IOT-AI powered system harnessing vast capacities for force mobilization and information gathering and processing. By integrating nanotechnology, the IOT, big data, and robotics while harnessing the processing power and flexibility of advanced AI, states may in this way be in the midst of unleashing technological capabilities that will enable them to informationalize and monitor human populations while mobilizing destructive power with an unprecedented degree of precision and sophistication.

Of course, without speculating on the future, we can already see how states are taking advantage of the global information infrastructure to enhance control over the security environment. In particular, the metastasizing US security state is already in process of forging an incipient Techno-Leviathan – a ‘global-surveillance-state-in-the-making’ – whose drive for informational omniscience is pushing it beyond territorial boundaries in an effort to control the global infosphere and erode all pretense of legality and democratic oversight (Engelhardt, 2014, p. 107). And we are seeing comparable developments in China, where advances in AI, the IOT, and big data are being used to construct a ‘citizen score’ system that incentivizes ‘good’ (i.e. regime-friendly) behavior and punishes citizens for critical thinking (Mitchell and Diamond, 2018). Thus, while securitization trends in the US and China should already give us pause, they will only become more extensive and intensive by integrating increasingly advanced FIR technologies over time, which would likely be the case if the latter are relied upon to achieve decoupling.

The spiral of insecurity and securitization

Overall, due to the combination of democratized violence capacities and totalitarian state powers that it would create, the FIR would likely generate a reinforcing spiral of insecurity and securitization that produces a qualitatively new kind of techno-authoritarianism on a global scale. To understand how this may come about, it is first important to recognize that even if the FIR enables the global economy to grow while stabilizing the climate at 1.5 or 2 degrees C (a highly optimistic assumption), this would still (according to one study) leave 16 to 29 per cent of the world’s population (mostly in the Global South) vulnerable to lethal climate impacts (Byers et al., 2018). Technological advance could certainly improve adaptation capacities even amidst such environmental changes, but poverty and deprivation will remain difficult to reverse, and deep grievances felt towards the Global North – due to its primary responsibility in creating the problem whose consequences are primarily suffered in the Global South – will make militant and/or terrorist violence a likely response. Second, we can see that the increasing dependence of the global economy on FIR technologies would create an exponential expansion of possible bio and cyber attack vectors. In conjunction with steady advances in technologies of securitization and rising fear among policy makers and populations, it may only require a relatively ‘minimal’ attack (e.g. something comparable to 9/11, rather than the kind of million or even billion casualty attack feared by some bioterror experts) to catalyze a further threshold of intensified global securitization.

What might this threshold entail? Abstractly, it could be understood as a shift from a predominant ‘liberal’ security apparatus to an ‘authoritarian’ mode that establishes a permanent ‘state of emergency’ on a global scale (Opitz, 2011). While we can only speculate on what this might look like in practice, especially as technologies of securitization advance, it would likely involve a conjoined transformation in and integration of both technological-surveillance and institutional-legal assemblages, with the former being intensified and extended while the latter sheds all pretext of democratic oversight to become an increasingly absolutist form of sovereign authority on a global scale. Surveillance would reach from the planetary to the molecular scale through a network of satellites, distributed environmental sensors, and AI-facilitated data collection and processing techniques; military force mobilization capacities of nearly absolute speed and global reach could be created through a combination of space-based and networked AI-robotic weapons systems; and the right of the planetary sovereign to detain individuals, mobilize force without legal pretext, and constrict the mobility of people and goods to more tightly regulated territories, would be enshrined. While such an apparatus may seem far-fetched, philosopher and futurist Nick Bostrom envisions a similarly totalitarian global surveillance system as the necessary prerequisite of global security in an age of democratized weapons of mass destruction (Bostrom, 2018). And he notes that ‘thanks to the falling price of cameras, data transmission, storage, and computing, and the rapid advances in AI-enabled content analysis, [it] may soon become both technologically feasible and affordable’ (Bostrom, 2018, p. 25).

In sum, while techno-authoritarian trends are already evident in the US and China, FIR technologies would further enhance their capabilities while ‘democratizing’ WMD capacities among non-state actors (Blum and Wittes, 2015). This would incentivize states to extend and deepen surveillance as far as possible while making democratic populations more willing to accept intensified securitization, therefore making it difficult to avoid an authoritarian global security apparatus.

Conclusions

To return to the question that opened this essay: can global capitalism solve the earth system crisis? I have shown that the answer is an ambiguous maybe: the FIR may enable economic growth to decouple sufficiently rapidly from CO2 emissions and broader environmental impacts to stabilize the earth system, though these technological solutions would then intensify risks in the domains of biosecurity, cybersecurity, and state surveillance, thereby unleashing a spiral of insecurity and securitization that will push global capitalism towards a new kind of techno-authoritarianism. It is thus worth showing, in a way that differs from, yet complements the arguments of degrowth advocates, that even if global capitalism can succeed in stabilizing the earth system in a context of endless growth, then it would likely create security threats and totalitarian dangers that would undermine the desirability of such a system.

This conclusion reinforces the need for a set of global policies that break decisively from the growth-oriented status quo. On one hand, to dampen these technological trends and improve the prospects of earth system stabilization, the pursuit of GDP growth should be replaced by alternative goals based on new metrics (e.g. the Genuine Progress Indicator or Index of Sustainable Economic Welfare) that more accurately represent social welfare (Kallis, 2018). The European Commission’s Beyond GDP project shows that steps are being taken in this direction, though they should go further by explicitly ending reliance on growth by placing hard caps on material-energy throughput while restructuring economies so that livelihoods are not dependent on increasing GDP (Hickel, 2019; O’Neill et al., 2018). On the other hand, many FIR technologies (especially open source synthetic biology) offer great promise for improving human welfare through advances in sustainable energy, agriculture, and medicine. Thus, transitioning beyond growth should not necessarily entail abandoning these technologies, and strong global regimes for regulating and monitoring their use would therefore be necessary. However, rather than simply strengthening existing regimes like the Biological Weapons Convention (Charlet, 2018) or relying on private sector-led initiatives to regulate emerging risks ‘without impeding the capacity of research to deliver innovation and economic growth’ (Schwab, 2017, p. 90), more far-reaching changes are needed to enhance democratic control over the pace and direction of technological innovation, thereby counter-balancing the influence of multinational firms and militaries. In particular, ‘citizens assemblies’ should be empowered to debate the relative benefits and risks posed by FIR technologies (from synthetic biology to IoT, nanotechnology, and AI) and set mandates regarding investment levels and priorities, the direction of research, and the pace of deployment, while also having the right to ‘relinquish’ certain technological trajectories if their risks are perceived to outweigh the benefits.5

Overall, a ‘post-growth’ economy based on more democratized ownership of common wealth, reduced overall material-energetic throughput, decelerated and democratically controlled technological innovation, and prioritization of production for meeting essential human needs rather than profit (Hickel, 2019; Kallis, 2018; Raworth, 2017), has the potential to create a global political-economy that meets all human needs within planetary boundaries without shifting problems into the realms of biosecurity, cybersecurity, and state securitization. While the obstacles it confronts are of course formidable, the alternatives may be ecological collapse and civilizational breakdown (if the FIR fails to decouple economic growth from environmental impacts) or global techno-authoritarianism (if it succeeds).

#### Extinction

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August 1, 2018 … The age of the downloadable gun formally begins.” So says the website of Defense Distributed, a nonprofit that creates and publishes blueprints for 3-D printed weapons. Cody Wilson — the founder of Defense Distributed, a libertarian and one of the 15 most dangerous people in the world according to Wired magazine — put up plans for a printable gun in 2013. Called “the Liberator,” it was a single-shot pistol made mostly of plastic. Shortly after the blueprints were put online the State Department ordered them removed, citing a possible violation of firearm export rules. Wilson sued, and in June the State Department decided to settle his case, winning him the right to put the plans back online — while also recouping nearly $40,000 in legal fees from the U.S. government.

Gun-rights advocates are celebrating the settlement as “the end of gun control,” in the words of Fox News columnist John Lott Jr.

That may seem hyperbolic, if only because a gun is one thing that is not hard to buy in America. While a printed, largely plastic gun may be able to slip past some metal detectors and won’t carry a serial number, the designs are still inferior to conventional firearms, and 3-D printers are still expensive and rare. It’s almost certain that the next mass shooting will be carried out the old-fashioned way.

But while the Liberator may seem like little more than an after-school project for libertarians, it’s the first sign of how 3-D printing — and other rapidly developing tools like synthetic biology — could empower individual rogue actors while eroding the ability of the government to maintain a monopoly on violence.

As the technology continues to develop, it may not be long before far more devastating weapons could be manufactured at home by 3-D printers, or before DIY biohackers could create dangerous viruses in their garages. Push far enough into the future and we may reach a time when almost any individual could have the ability to unleash a weapon that could end the world. And if we reach that point, we’re as good as done.

The Stanford political scientist James Fearon had a thought experiment he outlined in a 2003 talk, back when the global population was closer to 5 billion. He imagined a time where each person had the ability to destroy the world by pushing a button on their cell phone:

“How long do you think the world would last if five billion individuals each had the capacity to blow the whole thing up? No one could plausibly defend an answer of anything more than a second. Expected lifespan would hardly be longer if only one million people had these cell-phones, and even if there were 10,000 you’d have to think that an eventual global holocaust would be pretty likely. 10,000 is only two-millionths of five billion.”

Fearon’s argument—which I found in the 2015 book The Future of Violence—is that the conditions that have kept us un-blown-up so far are twofold. One, until the nuclear age, no weapon existed that could cause planetary catastrophe. And two, once those weapons existed, they were largely controlled by governments that, whatever else their faults, generally didn’t want to see the world destroyed.

Since the introduction of nuclear arms, we’ve avoided annihilation because these weapons require rare elements and rare expertise, both of which constrain access. Almost 63 years after Hiroshima, fewer than 10 countries possess a nuclear arsenal, and after years of trying, no terror group has yet managed to build or steal a nuclear bomb and use it.

That isn’t because terrorists don’t want nuclear weapons, any more than the relative success of nuclear non-proliferation suggests that world leaders are uniformly peace-loving. It’s because nuclear weapons are something that, by their nature and their expense, can be controlled by the state. Their continued existence is an ongoing existential threat to the human race, one that may still get us in the end, but if nuclear weapons were as easy to obtain and use as an AR-15, we’d have gone extinct years ago. It doesn’t matter that the vast majority of people would never use them, just as the vast majority of 3-D printed gun enthusiasts wouldn’t use their weapons to commit mass murder, just as the vast majority of biohackers wouldn’t abuse CRISPR. There are enough omnicidal maniacs out there that one, sooner or later, would press that button.

What Fearon highlighted is an extreme version of a collective action problem. If everyone eventually gains the power to potentially end the world, and governments are largely helpless to stop them, then the continued existence of the world depends on the collective action of all of us — all 7.4 billion and counting — to actively choose not to destroy the world.

Of course, no such omnicidal button exists, and it’s entirely possible that the technology that could create one will never be developed, or will be kept under tight control by governments. (Although given how difficult it is to prevent the spread of digital data — witness the losing battle against malware — that may eventually demand the kind of intrusive state surveillance that would make civil libertarians revolt.) But there’s a less extreme collective action problem that poses an existential threat to humanity today. It’s called climate change.

Climate change is, essentially, the sum of all our decisions. Our decisions to use fossil fuels. Our decisions to travel by car or jet. Our decisions to support politicians who deny the reality of global warming and work to thwart action to address it. And most of all, our decisions to prioritize the comfort of the present at the cost of the future.

It’s not that any of us consciously want to screw over the generations to come with hotter temperatures and more extreme weather. It’s that we’re each pursuing what we perceive as our individual good, the good of our family and close circle — the good of now. And through our collective actions, we create the catastrophe that is climate change, which will fall most heavily on the generations to come.

You can’t really blame us, according to Julian Savulescu. We are acting the way we evolved to act — biased towards the near future and the nearby, reluctant to sacrifice for the sake of those we’ll never meet and who have yet to exist. And that worked well enough for 10,000 years of civilization — until today, when this global village has the power to destroy itself through new weapons, through biotechnology, and through climate change.

“Our morality and our moral dispositions evolved to stop us from killing ourselves within our small group and to make sure that we cooperated with our small group,” says Savulescu, the Uehiro Professor of Practical Ethics at the University of Oxford. “But they didn’t evolve to provide benefits to strangers or to deal with large numbers of individuals at risk. All those features mean we’re particularly badly placed to deal with large statistical threats like the use of biological weapons or global collective action problems like climate change.”

Essentially Savulescu believes that we “lack the moral capacities to deal with the sort of world we’ve created for ourselves.” Fortunately, he has a solution.

I interviewed Julian Savulescu not long ago for my forthcoming book on existential risk. Savulescu is a bioethicist, originally from Australia — you can hear it in his twang. He’s best known for the principle of “procreative beneficence” — the idea that parents have a putative moral obligation to use the best tools available, including genetic screening and other biotechnology innovations, to select children with traits like higher intelligence and better memories, on the grounds that this will give the child the best chance of having the best life. This is both very controversial and, I’m willing to bet, exactly what will happen as our understanding of the genes underlying traits like intelligence and our ability to manipulate those genes improves.

But I wanted to talk to Savulescu because of a book he wrote with Ingmar Persson of the University of Gothenburg called Unfit for the Future: The Need for Moral Enhancement. Savulescu and Persson argue that technological development has put us at risk of what they call “Ultimate Harm,” otherwise known as the end of the world. To prevent Ultimate Harm, ultimate measures can be justified. And given that technology will increasingly give all of us the power to inflict Ultimate Harm — either quickly and individually in the case of bioterrorism or slowly and collectively in the case of climate change — what needs to change is us. If the world will blow up if just one of us pushes the self-destruct button — or if all of us won’t stop pushing the climate change button — than what we need are human beings who can be trusted not to push that button. What we need are better people.

“I think that we’re at this point where we need to look at every avenue,” says Savulescu. “And one of those avenues is not just looking to political reform — which we should be doing — but also to be looking at ourselves. We’re the ones who cause these problems. We’re the ones who make these choices. We’re the ones who create these political systems. No one wants to acknowledge the elephant in the room, and that is that human beings may be the problem, not the political system.”

Making people better people is what professors of practical ethics do, at the University of Oxford or elsewhere. It’s what moral educators of both the spiritual and the secular variety have done for eons, and it’s what parents try to do — with more or less success — through the act of parenting. And judged over the span of history, we’re doing a decent enough job. In books like The Better Angels of Our Nature, the Harvard psychologist Steven Pinker has shown that rates of violence have plummeted over the centuries. In general, our circle of moral sympathy and the value we place on human rights has grown over time. You are almost certainly a more moral person than your great-great-great-grandparents.

The problem, as Savulescu sees it, is that while we’re getting better, we’re not getting better fast enough. “There’s this growing mismatch between our cognitive and technological powers and our moral capacity to use them,” he says. As that gap grows, we leave ourselves increasingly vulnerable to Ultimate Harm at our own hands. So Savulescu believes that we should use that technological power to give our moral capacities a quick boost — a moral bioenhancement.

As Savulescu sees it, the same cutting-edge biotechnology that poses an existential risk could one day be used to engineer more ethical and more moral human beings. As we learn to identify the genes associated with altruism and a sense of justice, we could turn them up in the next generation, creating children who would innately possess the wisdom not to use that terrifying bioweapon, who would see the prudence in curbing their present-day consumption to ensure that future generations have a future. (They also might be more apt to do their chores.) The options for self-destruction would still exist, but our morally bioenhanced offspring would be too good to choose them. “We have to decide what kind of people we want,” Savulescu says. “It’s not something we’ve begun to embrace because we have this sort of liberal neutrality, this relativism about morality that says, ‘Wow, we can’t really decide which moralities are better than the others.”

The objections to Savulescu’s arguments come fast and furious. I can already see the Fox News chyrons: “Oxford academic wants to genetically engineer your children to be Al Gore.” It’s legitimate to ask who, exactly, would decide what is right and what isn’t in this brave new world. As history has shown, what we think of as ethical and moral shifts over time. If the Elizabethans had possessed the power of engineering morality into their children, bear-baiting — tormenting bears to death in a pit — might still be considered a wholesome pastime. So might torturing priests.

Robert Sparrow, a bioethicist at Monash University in Australia, argues that Savulescu and Persson are simultaneously extremely pessimistic about our ability to use politics to solve the problems that technology has created, and extremely optimistic about the ability of genetic engineering and pharmaceuticals to form a more perfect citizen. He also notes the “not-inconsiderable problems involved in applying [moral bioenhancement] to ‘hundreds of millions’ of people without presuming or licensing an authoritarianism that would most likely render the project moot.” We’d be more moral and we’d be more likely to survive — but we wouldn’t be free.

Savulescu disagrees. He cites studies showing that criminal behavior drops markedly in adults with ADHD who are put on drugs like Ritalin. That’s moral bioenhancement of a sort. “It enables them to exercise more control over their life and also promotes their own well-being,” Savulescu argues. “I don’t think that undermines freedom. It enhances freedom. I think this kind of immediate conclusion that any sort of biological intervention undermines freedom is just silly. It’s important also to recognize that our freedom is restricted all the time. We have laws that are coercive and if biological intervention meant that you weren’t going to become a psychopath, well, that might be worth giving up that freedom.”

Savulescu’s argument is tempting. Many American parents already put intensive effort into shaping the kind of person their child will be, from strict controls on diet among mothers-to-be to, yes, prescriptions for behavioral modification drugs like Ritalin. (Over 3 million American children are currently taking ADHD drugs.) Jennifer Doudna, who helped invent the gene editing technology CRISPR, told Medium in a recent interview that members of her team have already been approached about making designer babies. And of course when we choose a person to have a child with, we’re making a decision that will irrevocably if indeterminately shape the product of that relationship. One thing many parents don’t seem terribly worried about is the possibility that our children’s freedom might somehow be impaired. Savulescu’s moral bioenhancement would be a big next step — and a step we don’t currently have the ability to take, at least not as he fully envisions it — but would it really be that out of line with what we’re already doing?

Maybe there’s something about fiddling with how we make moral decisions that seems particularly problematic. To make a child taller, faster, smarter — nature does this already through the genetic lottery. We know that our genes will influence how tall we grow or how athletic we become. But whether or not we are a good person — surely that should be our choice. It would be absurd to praise an adult for being tall, but if morals could be genetically influenced the way height is, would it be just as absurd to praise them for being good?

Savulescu is a professor of practical ethics, and his practical interest here is saving the world, from the threat of climate change or bioterrorism or whatever abusable technology our rapidly developing cognitive powers might dream up next. The age of the downloadable gun is just the latest sign of the age of escalating existential risk.

“The problem with technology is that you can’t wind it back, and you can’t just avoid it,” he says. “It brings this enormous responsibility, but I don’t think people realize that. They think they can avoid responsibility by deciding to do nothing or by trying to ban things, and I think that’s [that is] the wrong choice.”

#### 3) WRONG INNOVATION---under growth, things get cheaper, NOT cleaner

Parrique et al. 19, Timothée Parrique, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne; Jonathan Barth, ZOE.Institute for Future-Fit Economies; François Briens, Independent, Informal Research Centre for Human Emancipation; Christian Kerschner, Department of Sustainability, Governance, and Methods, MODUL University Vienna, Austria, and the Department of Environmental Studies, Masaryk University, Brno, Czech Republic; Alejo Kraus-Polk, University of California; Anna Kuokkanen, Lappeenranta-Lahti University of Technology; Joachim H. Spangenberg, Sustainable Europe Research Institute (SERI Germany), “Decoupling Debunked,” July 2019, European Environmental Bureau, https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

Not leading to relevant innovations

Innovation is not in and of itself a good thing for ecological sustainability. The desirable type of innovation is eco-innovation or one that results “in a reduction of environmental risk, pollution and other negative impacts of resources use compared to relevant alternatives” (Kemp and Pearson, 2008, p.5). But this is only one type among several. In general, firms have an incentive to innovate to economise on the most expensive factors of production to maximise profits. Because labour and capital are usually relatively more expensive than natural resources, more technological progress will likely continue to be directed towards labour- and capital-saving innovations, with limited benefits, if any, for resource productivity and a potential rise in absolute impacts due to more production. But decoupling will not occur if technological innovations contribute to saving labour and capital while leaving resource use and environmental degradation unchanged.

Another issue is that technologies do not only solve environmental problems but also tend to create new ones. Assuming that resource productivity becomes a priority over labour and capital productivity, there is still nothing preventing technological innovations from creating more damage. For example, research into processes of extractions can lead to better ways to locate resources (imaging technologies and data analytics), to extract them (horizontal drilling, hydraulic fracturing, and automated drilling operations), and to transport them (Arctic shipping routes). These innovations may target resource use but with a result opposite to the objective of decoupling, that is more extraction. And this is not even considering unintended side-effects, which often accompany the development of new technologies (Grunwald, 2018).

#### Prefer our evidence---it reflects scientific consensus.

Ted Trainer 21, retired from University of New South Wales, “Degrowth: How Much Is Needed?,” Biophysical Economics and Sustainability, vol. 6, no. 2, 05/17/2021, p. 5

Cannot Technology Solve the Problems?

The faith that technical advance can enable economic growth without growth in resource use is contradicted by a large amount of evidence. Many studies show that despite constant effort to improve productivity and efficiency, productivity growth is low and falling, and growth of GDP is accompanied by growth in resource use. (See the recent powerful refutations by Hickel and Kallis (2019), Parrique et al. (2019) (reporting on over 300 papers) and Haberle et al. (2020) (reporting on over 850 studies.) This would seem to constitute a very substantial case against the faith of the “tech-fix” and “Green Growth” believers and the “Ecomodernists”. The competitive economy generates constant effort to achieve increased efficiency, recycling and technical breakthroughs but the decoupling evidence shows that these efforts are not enabling stabilisation of global resource use, let alone reductions on the scale argued above and in the general degrowth literature. (For a discussion of additional reasons why tech-fix faith is mistaken see Trainter 1988, pp. 187–214.)

#### 4) PERMANENCE---decoupling isn’t

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

There’s a final problem. Scientists are beginning to realise that there are physical limits to how efficiently we can use resources. Sure, we might be able to produce cars and iPhones and skyscrapers more efficiently, but we can’t produce them out of thin air. We might shift the economy to services such as yoga and movies, but even workout studios and cinemas require material inputs. There is always a limit to how ‘lightweight’ a product can be. And once we approach that limit, then continued growth causes resource use to start rising again.

This question was recently studied in detail by a team in Australia led by the scientist James Ward. They ran a series of models with extremely optimistic rates of technological innovation – well beyond what scientists consider to be feasible and faster than anything even green growth proponents have ever proposed. What they found is that while they were able to achieve some reductions in resource use in the short term, in the longer term resource use started rising again, recoupling with the rate of growth.

Ward’s team say their findings constitute a ‘robust rebuttal to the claim of absolute decoupling’. It is worth quoting their conclusion at length, as it has become quite famous in the field of ecological economics:

We conclude that decoupling of GDP growth from resource use, whether relative or absolute, is at best only temporary. Permanent decoupling (absolute or relative) is impossible for essential, nonsubstitutable resources because the efficiency gains are ultimately governed by physical limits. Growth in GDP ultimately cannot plausibly be decoupled from growth in material and energy use, demonstrating categorically that GDP growth cannot be sustained indefinitely. It is therefore misleading to develop growth-oriented policy around the expectation that decoupling is possible.

### AT: Sustainability---AT: Decoupling---AT: EKC

#### Even if EKC’s true---it’s too slow to solve extinction

Umberto Mario Sconfienza 20, Goethe University Frankfurt, “Incomplete Ecological Futures,” World Futures, vol. 76, no. 1, Routledge, 01/02/2020, pp. 17–38

Technological Solutions for Market Forces

The theory underpinning the Economic Kuznets Curve hypothesis predicts that environmental scarcity and material affluence will produce a shift towards greener preferences and lifestyles. Yet, while this should be a case of values and behavior change, this shift towards immaterialist values will not happen at a speed sufficient to avert the most dangerous effect of environmental degradation. Among the greenest countries around the world in terms of the preferences of their citizens stand the Nordic countries (Franzen & Vogl, 2013), yet even their ecological footprint, if scaled to the planet, would not be compatible with a safe and sustainable future (Global Footprint Network, 2018).

#### BUT, it’s wrong:

#### 1. Doesn’t count per-capita OR per-income which are key

Selin Özokcu & Özlem Özdemir 17, PhD Student at Earth System Science Program and Research Assistant at Department of Business Administration, “Economic Growth, Energy, and Environmental Kuznets Curve,” Renewable and Sustainable Energy Reviews, vol. 72, 05/2017, pp. 639–647

In the last decades, studies about CO2 emissions have been increasing due to concerns with the global climate change. CO2 emissions, which of enormous amount are resulted from the combustion of fossil fuels, have been accelerating drastically after the industrial revolution and they clearly damage the environment. Most of the studies in the literature are empirically detecting the relationship between economic growth and environmental degradation in the context of the EKC.

In this study, the relationship between per capita income and per capita CO2 emissions is examined under two circumstances. The first analysis is done for 26 high income OECD countries for the time periods between 1980 and 2010. The results of the panel data analysis show that the inverted N-shaped curve, which do not hold the EKC. The analysis is for 52 emerging countries for the same time horizon. Results suggest the N-shaped curve. Hence, the EKC is not valid for this set of countries as well. Therefore, our data sets for both cases reveal that the EKC is not valid.

Then, all analyses for two different situations are carried out by adding the per capita energy use as an explanatory variable to check the energy, environment, and economic growth nexus with respect to the EKC. We find that the inverted N-shaped curve for 26 countries analysis and the N-shape curve for 52 countries one. Both of them do not support the existence of the EKC. 14

Thereby, the EKC does not exist for the data sets used in this paper. On the other hand, the per capita energy use is significant for all cases and all polynomial specification. This may be a good indicator for the importance of including the energy use into the economic growth and environmental nexus.

Obviously, there is no statistical evidence supporting the EKC for neither per capita CO2 emissions and per capita income nor per capita CO2 emissions, per capita income, and per capita energy use in two different circumstances. Results of our analysis do not confirm that CO2 emissions increase along with the increase in income until the turning point and decline due to higher levels of income. This result could have been observed at least for the high income OECD countries as they should have been the closest countries to the turning point. Besides, high income OECD countries, except the US, ratified the Kyoto Protocol and they have a commitment to reduce their emissions to a certain level. However, the U-shaped curve proves the opposite; while inverted N-shape curve displays that they are in a kind of cycle to decrease emissions level then increase it and then decrease it again. Moreover, N-shaped curve is an indication of insufficiency of environmentally friendly improvements. Therefore, depending on results of our analyses, policies for reducing the GHGs emissions like Kyoto Protocol seem insufficient as permanent patterns for reducing CO2 emission is not observed for aforementioned countries and cases. This situation may lead us to infer that binding agreement on global, national, and local level for reducing CO2 emission is urgently needed to mitigate or adapt to climate change.

#### 2. Gains are temporary which time-limited studies ignore.

Selin Özokcu & Özlem Özdemir 17, PhD Student at Earth System Science Program and Research Assistant at Department of Business Administration, “Economic Growth, Energy, and Environmental Kuznets Curve,” Renewable and Sustainable Energy Reviews, vol. 72, 05/2017, pp. 639–647

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There are contradictory results about EKC in the literature. More specifically, the findings depend on many criteria such as the pollutants taken into account, and the econometric technique is used change the results of these studies. Thus, results of our analyses should be perceived as one of the empirical analysis although they disprove the validity of the EKC.

Even if the validity of the EKC hypothesis is supported by our analyses, this may still seem problematic. The EKC hypothesis posits that the economic growth can be a remedy for environmental degradation; hence, the exploitation of natural resources for the sake of economic growth can be acceptable until reaching the turning point of the curve. However, irreversibility of the ecological damages and resilience capacity of ecosystems are apparently neglected with this perception. Deterioration of ecosystems and environment may persist even after reaching the specific income level when irreverseble damages have already been done. This persistence is crucial especially for CO2 emissions and its long term impacts on environment. As a result, actions to slow down the release of CO2 emissions should not wait until reaching high income levels or raising awareness about environmental concerns. Global, regional, and local policies are needed independently from the income level to combat climate change, or at least to adapt to climate change.

#### 3. Data is bad and focused on local pollutants, not GHGs which are a cross-border externality

Gill et al. 17, Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia, “Is Environmental Kuznets Curve (EKC) Still Relevant?,” International Journal of Energy Economics and Policy, vol. 7, no. 1, 1, 01/17/2017, pp. 156–165

2. PROBLEMS WITH EKC

2.1. Different EKC for Different Pollutants

The empirical studies on EKC all over the world have used different estimation methods, different dataset, and different environment indicators and resulting in a broad spectrum of interpretations. The empirical studies on EKC have diverse results depending on the type of the pollutant. The EKC transition is found very true for the pollutants that have local and regional dimensions and can be reduced at the relatively low cost of economic growth (Ansuategi and Escapa, 2002; Dinda, 2004; Lieb, 2004). These are the pollutants that have a damaging impact on the environment of that area where they are being produced like sulphur dioxide (SO2 ), carbon monoxide, nitrogen oxides (NOs), particulate matter, urban garbage and water pollution. The NOs and SO2 have local as well as transboundary impacts and are the main cause of acid rain. Special separation is easy for local pollutants relative to the global pollutants. So as the income of the society increases the demand for quality environment increases and government have to respond by strengthening the environment laws and by investing in green technologies. According to Shafik and Bandyopadhyay (1992) “because of the greater local benefits of abatement, local pollutants tend to decline with income when countries reach the middle-income level, while global pollutants continue to increase.”

Most of the studies like (De Bruyn, 1997; Stern, 2004; Deacon and Norman, 2006; Brajer et al., 2008; Fodha and Zaghdoud, 2010; Miah et al., 2010; Orubu and Omotor, 2011; Chiu, 2012; Alonzo and Puzon, 2013; Farhani et al., 2014; Shahbaz et al., 2015; AlMulali et al., 2015; Ben Jebli et al., 2016) found empirical support for the existence of EKC for local pollutants. Many developed countries have managed their urban and industrial wastes, water pollution and local air pollution as they entered to the advanced stages of economic development.

The global pollutants are taken attributed to worldwide warming. They are less detrimental to the environment of the area where they are being produced. Carbon dioxide, chlorofluorocarbons, and methane are the examples of global air pollutants. They deplete the ozone layer and causing world temperature to rise. Due to global nature of the impact of these pollutants, the local governments have little incentive to take measures to tackle theses pollutants. Moreover, the states can free-ride and benefit from the efforts of other nations to abate these pollutants.

Most of the studies like (Aslanidis and Iranzo, 2009; Cantore, 2010; He and Richard, 2010; Miah et al., 2010; Wagner, 2010; Naglis-Liepa, 2011; Zanin and Marra, 2012; Robalino-López et al., 2014; Tan et al., 2014; Ozturk and Al-Mulali, 2015) examined the existence of the EKC in case of green house gases (GHG) like CO2 and made number of conclusions. The most of the empirical studies find that carbon emissions seem to increase at ever decreasing rates, and predicted peaks of the EKC in different countries and region are far outside reasonable income levels. As a global pollutant involving cross-border externalities, no country has sufficient incentive to regulate these emissions. Therefore, the empirical literature on EKC did not provide the answers to the most of the critical questions.

2.2. Data and Estimation Problems

The main argument against the EKC was that it demonstrates only for a subset of pollution indicators. For example, most of the EKC studies focus on air pollutants such as SOx, COx, NOx, and particulates. There are numerous empirical studies on EKC with different specifications and most of these studies rely on global environmental monitoring system (GEMS) for their data on pollution. GEMS is sponsored by UNs and it gathered data from developing and developed countries. GEMS has limited scope as it contains information on commonly regulated water and air pollutants like carbon monoxide, ozone, sulfur dioxide, suspended particulates, and NO and lead.

Secondly, the information about many pollutants is very rare even in developed countries. There are so many unregulated toxic pollutants causing disease, deaths and birth defects and theses toxic emissions are still untested. Although, advanced countries have started to gather data in this regard, but developing countries did not pay any attention to these dangerous toxic emissions. As a result, these untested unregulated toxins remained outside from the focus of the EKC studies.

Thirdly, almost all EKC studies used the pollution data till the 1970s. These studies cover the time period when advanced countries have turned their EKC (Vincent, 1997). So any valid inference of the EKC based on these studies cannot be made. Finally, there are many environmental problems for which the empirical estimation is not possible due to lack of data. These environment issues are a loss of biodiversity, desertification, soil erosion, pollution of ground water and much more. Therefore, the EKC studies based on few limited pollutants may not be the true representative of pollution environment relation.

#### 4. Ignores unquantifiable eco loss

Gill et al. 17, Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia, “Is Environmental Kuznets Curve (EKC) Still Relevant?,” International Journal of Energy Economics and Policy, vol. 7, no. 1, 1, 01/17/2017, pp. 156–165

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### AT: Sustainability---AT: Decoupling---AT: Energy

#### Energy can’t be decoupled:

#### 1) EROI---it’s negatively correlated with GDP

Parrique et al. 19, Timothée Parrique, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne; Jonathan Barth, ZOE.Institute for Future-Fit Economies; François Briens, Independent, Informal Research Centre for Human Emancipation; Christian Kerschner, Department of Sustainability, Governance, and Methods, MODUL University Vienna, Austria, and the Department of Environmental Studies, Masaryk University, Brno, Czech Republic; Alejo Kraus-Polk, University of California; Anna Kuokkanen, Lappeenranta-Lahti University of Technology; Joachim H. Spangenberg, Sustainable Europe Research Institute (SERI Germany), “Decoupling Debunked,” July 2019, European Environmental Bureau, https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

1. Rising energy expenditure

The availability of natural resources does not only depend on their absolute quantity (how much is “out there”) but also on their quality and accessibility (how much effort is required to extract them). When extracting a resource, cheaper options are generally used first, which means that most readily available energy and material resources mobilised by the economy have already been exploited.25 The extraction of remaining stocks then becomes a more complex, more technology demanding, more socially disruptive hence generally more expensive, more resource- and energy-intensive and polluting process resulting in a rising total environmental degradation per unit of resource extracted. This is the case for low-concentration metal and mineral depots, tar sands, deep off-shore wells, stocks located in polar regions or near densely populated cities like shale gas near Paris. These increasing energetic costs26 of extraction means that more intermediate resources are necessary to extract the final resources required for the production of the same quantity of goods and services, leading to the opposite of decoupling.

#### 2) LINKS TO REBOUNDS

Lorenz T. Keyßer & Manfred Lenzen 21, Keyßer, ISA, School of Physics A28, The University of Sydney; Lenzen, Department of Environmental Systems Science, Institute for Environmental Decisions, ETH Zürich, “1.5 °C Degrowth Scenarios Suggest the Need for New Mitigation Pathways,” Nature Communications, vol. 12, no. 1, 1, Nature Publishing Group, 05/11/2021, p. 2676

Energy-GDP decoupling

In the LED scenario, technological efficiency measures such as widespread digitalisation and electrification lead to a 53% reduction in final energy demand in the global North and 32% in the global South (40% globally) by 2050. However, Grubler et al.3,5 state that they do not explicitly consider the effect of their energy pathway on GDP growth. In contrast, Hickel18 calls this scenario a degrowth scenario, owing to the likelihood that such energy-GDP decoupling is impossible. There are several reasons to justify this likelihood, as recently summarised by a number of studies5,8,14,15,27,28,29, which are not considered by the IPCC IAMs8,27. Firstly, Ayres & Warr30, Keen et al.28 and others7,14,27 show that ‘total factor productivity’ (other production factors influencing economic growth besides capital and labour) is strongly connected to total energy use and its conversion efficiency into useful energy (energy use after accounting for production and conversion losses), contrary to neoclassical economic theory. Secondly, Sakai et al.14, find that for industrialised countries such as the UK (p. 1) ‘gains in thermodynamic efficiency are a key ‘engine of economic growth” due to economy-wide rebound mechanisms. Thus, (p. 11) ‘[t]he tight coupling between global energy use and GDP [...] can be explained because of—not in spite of—decades of global energy efficiency investment.’ This is in line with recent results by Heun & Brockway31, who state (p. 1): ‘Absolute decoupling of energy from [GDP] appears mission impossible’, again owing to feedbacks of efficiency gains. As a recent review8 concludes, such economy-wide rebound effects undermine more than half of the potential energy efficiency savings. It is further corroborated by recent evidence showing that until now digitalisation has likely led to a net increase in energy consumption by driving energy efficiency and thus economic growth19,29. At last, Ward et al.15 show that in the longer term (p. 1) ‘GDP ultimately cannot plausibly be decoupled from growth in material and energy use’. This is also the case in service-based economies, since services embody materials and energy29,32 and energy intensive goods are usually outsourced31. Increasing tertiarization in industrialised countries has not led to decreases, but rather increases in energy use and CO2 emissions32. Biophysical efficiency and scale of an economy appear to be structurally connected5,6,8,14,27,29,31. These reasons justify considering the reliance upon high energy-GDP decoupling a substantial risk for feasibility.

From this perspective, the scenarios with the lowest risk for feasibility are those in the ‘low energy-GDP decoupling’ group, which comprises our ‘Degrowth’ scenarios. All other scenarios show, in part substantially, higher energy-GDP decoupling than historically experienced as per Fig. 5 (e.g., the LED and our Dec-Extreme scenarios are over three times higher on average between 2020 and 2040).

#### 3) TOO SLOW---even net zero isn’t enough

--NZE = net zero by 2050, stands for net zero energy

Chris Rhodes 21, Sussex University obtaining both his B.Sc and D.Phil there and then worked for 2 years at Leicester University as a post-doctoral fellow with Professor M.C.R.Symons FRS, was appointed to a "new-blood" lectureship in Chemistry at Queen Mary and Westfield College, London University and then moved to LJMU as Research Professor in Chemistry, founder and director of Fresh-lands Environmental Actions, “Not Just Energy, but Everything,” Resilience, 5-28-2021, https://www.resilience.org/stories/2021-05-28/not-just-energy-but-everything/

The NZE scenario has critical implications for global oil demand, which would need to fall from 88 million barrels a day (mbd) in 2020, to 72 mbd in 2030; reaching 24 mbd in 2050 (an overall annual decline of -4.2%). If all further investment in those fields now producing were to cease, the global oil supply would decline by -8%/year, but the IEA estimate that this can be braked at -4.5% by allowing continued investment in existing fields, including those already approved for development. However, a delicate balancing act is required, since if the resulting loss of oil is not adequately matched in step by alternatives such as EVs, discontinuities may appear in the energy supply chain, with impacts on critical functions, e.g. transportation.

Thus, governments need proactively to anticipate energy security risks surrounding market concentration, critical minerals and an increased reliance on electricity systems, including their vulnerability to cyber attack: in 2050, almost 50% of global energy would be used in the form of electricity, up from 20% in 2020. This will necessitate a huge increase in the production of lithium, cobalt, nickel, graphite, rare earths and copper, whose supplies must be secured by individual nations. As the mining or processing of these resources is concentrated in only a few countries, potential geopolitical problems seem almost inevitable.

If entirely implemented, the global energy landscape would be almost unrecognisable, as NZE summarises:

“By 2050, the energy world looks completely different. Global energy demand is around 8% smaller than today, but it serves an economy more than twice as big and a population with 2 billion more people. Almost 90% of electricity generation comes from renewable sources, with wind and solar PV together accounting for almost 70%. Most of the remainder comes from nuclear power. Solar is the world’s single largest source of total energy supply. Fossil fuels fall from almost four-fifths of total energy supply today to slightly over one-fifth. Fossil fuels that remain are used in goods where the carbon is embodied in the product such as plastics, in facilities fitted with carbon capture, and in sectors where low-emissions technology options are scarce.”

NZE is an attempt at “business as usual”: of trying to maintain the mechanics of current civilization, but with energy largely provided from renewable sources, instead of fossil fuels. In a practical sense, “renewable” is a misnomer, since although the power of the sun, and of the wind which it also drives, is effectively endless, acquiring useful energy, still depends on minerals mined from the Earth, and which are subject to the inevitability of depletion, the same as the fossil fuels are now. To some extent, this can be mitigated by recycling, but there are energy costs and the need to create new infrastructure on a very large scale to do this.

Meanwhile, until the new low carbon energy system has attained a sufficient size to feed back energy to build and maintain itself, fossil fuel energy will be required to subsidise its growth. Hence, the questions arise of, how much energy do we really need, and [how] might we manage with [a lot] less of it?

Indeed, while energy is the critical underpinning factor for future society, it is not the only point of issue, and we are presented with an opportunity to reimagine that society. It is noteworthy that the richest 10% of humans on Earth produce 52% of its total emissions (of which 15% are produced by the “top” 1%); hence, this is where the major behavioural changes (a critical feature of NZE) must be made.

In all probability, the NZE projections both in terms of energy saving and changing our behaviour must be transcended considerably, if we are to deal with all aspects of a changing climate. The fundamental concept of “net zero”, has recently been challenged as a “dangerous trap”, in that it might be used to defer action that should be taken immediately, continuing to burn fossil fuels as part of a business plan that assumes carbon emissions will be cleaned up later, using technology as yet to be applied on the massive scale.

Globally, the energy costs of transportation run to 21% of primary energy consumption; hence, a curbing of the unnecessary movement of people or goods (including food and energy) could considerably reduce the amount of low carbon energy that must be produced.

Indeed, relocalisation has been proposed as the best single approach to reducing demand for oil and resources of all kinds, while building resilience into our communities and societies. The process of relocalisation implicitly involves many other re-words, all of which ameliorate demand for energy and other resources, e.g. reduce, reuse, recycle… repair, repurpose, replace, refill, rethink, redesign, reimagine, reinvent, regenerate, restore, respond, refuse!

To tackle the global problem of climate change will require unparalleled coordination and collaboration across societies and between nations. Without the international cooperation assumed in NZE, the transition to net‐zero emissions “would be delayed by decades”, thus greatly increasing the chances of missing the 1.5 oC target. At a time when the peoples of the world are becoming increasingly fragmented and divided, along with potential production and supply issues, this does not appear unlikely.

In any case, to focus primarily on eliminating carbon emissions is too narrow: the problems confronting humanity are actually systemic in nature, and not resolved by changing the source(s) of our energy alone, while degradation of the natural environment and depletion of resources continue.

Indeed, we can list energy and carbon emissions along with many other of the “world’s woes”, such as loss of biodiversity and habitat, pollinator decline, soil erosion, and a consumption of close to 100 billion tonnes of materials every year (even allowing for a substitution of coal, gas and oil by other minerals), which, acting in concert, comprise what has been termed the “changing climate”.

The world food system and (as part of it) deforestation are major contributors to this overall degradative mechanism. Potential biodiversity threats from mining the necessary minerals for renewable energy, are also likely to be exacerbated.

Thus, in our quest for Net Zero carbon emissions, what if we exhaust our resources – of which the most precious is time – in a last ditch attempt to prop up a system that fails us anyway? What then?

### AT: Sustainability---AT: Decoupling---AT: Materials

#### Materials are finite---the efficiency of extraction is declining across the board, AND every substitution destroys the environment.

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Similarly, and for the same kind of reasons, the rule of increasing marginal costs or the best-first principle applies to material extraction. A series of studies already show how the quality of ores of essential minerals are declining (e.g. Calvo et al., 2016). Lower ore grades mean more overburden and environmental damage.

The average concentration of copper in ore/mined material went from 1.8% in 1930 to 0.5% today (Arnsperger and Bourg, 2017, p. 87), a situation that is common to other minerals. Lower concentration rates for minerals means that higher volumes of materials need to be mined and displaced to extract the same amount of ore and with it more energy. In the first UNEP decoupling report, Fischer-Kowalski et al. (2011b, p. 25) estimate that, on average, the extraction of materials today requires to displace three times more matter than a century ago.

This is particularly problematic when it comes to green technologies (Calvo et al., 2016; Valero et al., 2018). Indeed, the mineral intensity of renewable energies is higher than the one for fossil fuels – 1kWh of renewable energy requires 10 times more metals than 1kWh of fossil energy (Arnsperger and Bourg, 2017, p. 87). Add increasing production into this, and the following vicious circle emerges: more energy will be necessary to extract more minerals which are needed to build more energy infrastructure, part of which is needed to provide the additional energy required to extract more minerals and so on and so on. Renewable energies can mitigate some environmental impacts but they cannot trump resource scarcity.

What is often forgotten is that this increasing resource scarcity also translated into an ever further expansion of the so-called commodity frontier (Moore, 2000), that is advancements into previously untouched pristine areas, often at the cost of indigenous communities and ecosystems’ health. Current examples include the extraction of tar sand in Alberta, Canada, oil in the Peruvian rain forest, or, most famously, in a national park in Ecuador. While these involve fossil fuels, the reach for the minerals required to build renewable energy infrastructure poses a similar threat to socio- and biodiversity.

Energy and material are crucial for the functioning of an economy, and even more so for one that is growing. Just like a living organism, an economy requires energy and material not only to grow but also only to maintain its current size. All available evidence points towards increasing costs of extraction for both energy sources and materials. If economic growth requires more energy and material, and it takes increasingly more energy and material to extract energy and material, then rising energy expenditure acts as a limit to growth and constitutes a barrier to decoupling. In order to argue that decoupling is possible, one must show how to deal with the increasing marginal cost of energy and material extraction.

### AT: Sustainability---AT: Decoupling---AT: Renewables

#### Renewables can’t solve:

#### 1) NOT ADOPTED

Ugo Bardi 20, professor of physical chemistry at the University of Florence, “Strategies for Managing Collapse,” Before the Collapse, Springer International Publishing, 2020, pp. 171–236, DOI.org (Crossref), doi:10.1007/978-3-030-29038-2\_4

This discussion may sound pessimistic but we do not have to be discouraged, we only need to be more creative. If technology cannot produce miracles, it is also true that maybe we do not need them. We saw that complex systems are entropy-producing machines that feed on energy potentials. So, if we want the complex system we call “civilization” to keep going in some form or another, we need to provide food for it: an amount of energy comparable to the one produced today mainly by means of fossil fuels. It is not impossible. The paper that myself, Sgouris Sgouridis, and Denes Csala published in 2016 with the title The Sower’s Way [23] shows that the renewable technologies we have today, mainly wind and photovoltaics, are good enough to replace the energy flow we obtain today from the dwindling fossil fuel resources, without causing greenhouse emissions. We found also that it would be possible to use the remaining fossil fuels to jump start a renewable-based infrastructure that, subsequently, would not need fossil fuels anymore. In other words, we would use fossil fuels in the same way as our farmer ancestors used corn saved from the previous harvest for the new one. A nice idea with one glitch: it will be very expensive, although not impossible. The data also show that, if we want this transition, we have to start paying for it right now. We need to increase by about a factor of 50 the amount of energy invested in creating a new energy infrastructure. That is unlikely to happen considering that in the present debate the opinion leaders have not yet realized the true potential of renewable energy. Apparently, we are not as wise as our ancestors and we believe that the good thing to do is to eat our seed corn. As long as we keep this attitude, no technological progress will save us from the coming Seneca Cliff.

#### 2) TOO SLOW---it only works under degrowth

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

The key point to grasp is that while it’s possible to transition to 100% renewable energy, we cannot do it fast enough to stay under 1.5°C or 2°C if we continue to grow the global economy at existing rates. Again: more growth means more energy demand, and more energy demand makes it all the more difficult (impossible, in fact) to generate enough renewable capacity to meet it.

Don’t get me wrong. We have made extraordinary gains in renewable energy capacity over the past couple of decades, and this is wonderful news. Today the world is producing 8 billion more megawatt hours of clean energy each year than in 2000. That’s a lot – enough to power all of Russia. But over exactly the same period, economic growth has caused energy demand to increase by 48 billion megawatt hours. In other words, all the clean energy we’ve been rolling out covers only a small fraction of new demand. It’s like shovelling sand into a pit that just keeps getting bigger. Even if we doubled or tripled the output of clean energy production, we would still make zero dent in global emissions. Growth keeps outstripping our best efforts to decarbonise.

Think about it this way. If we continue to grow the global economy at projected rates, it will more than double in size by the middle of the century – that’s twice as much extraction and production and consumption than we are presently doing, all of which will suck up nearly twice as much end-use energy than would otherwise be the case.14 It will be unimaginably difficult for us to decarbonise the existing global economy in the short time we have left; impossible to do it nearly twice over. It would require that we decarbonise at a rate of 7% per year to stay under 2°C (which is dangerous), or 14% per year to stay under 1.5°C. That’s two to three times faster than what scientists say is possible even under best-case scenario conditions.15 As one team of researchers put it, it is ‘well outside what is currently deemed achievable’.16

Our insistence on perpetual growth is making our task much more difficult than it needs to be. It’s as though we’ve chosen to fight this life-or-death battle facing uphill, blindfolded, with our hands tied behind our backs. We are knowingly stacking the odds against ourselves.

This conclusion is shared widely among scientists, including at the very highest levels. Even the IPCC itself acknowledges that without BECCS and other speculative technologies, there’s no feasible way to roll out clean energy fast enough to get to zero emissions by 2050 as long as energy demand keeps growing.17 If we want to succeed, we have to do exactly the opposite: we have to scale down energy use.

#### 3) NOT SUFFICIENT---the grid’s 18% of emissions

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But now we arrive at what is perhaps the biggest obstacle in the way of a 100% renewable energy transition within a growth economy. Even if it is possible to convert existing electricity supply to renewable energy, what must be recognised is that electricity is only about 18% of global final energy supply (IEA 2017a). If the challenge of meeting base load and peak load electricity is difficult and expensive even when this is merely 18% of global final energy demand, imagine the magnitude of the challenge if the other 82% of demand (especially that portion cur- rently met via oil) is converted to electricity. Oil analyst Robert Hirsch and his colleagues are right to describe the challenge of peak oil mitiga- tion as first and foremost being a liquid fuels transportation challenge (Hirsch et al. 2010). The climate challenge is similar: how can a glo- balised industrial economy continue without oil?

#### Second, they fail:

#### a) MATERIALS---still unsustainable and finite---causes resource wars

Lorenz T. Keyßer & Manfred Lenzen 21, Keyßer, ISA, School of Physics A28, The University of Sydney; Lenzen, Department of Environmental Systems Science, Institute for Environmental Decisions, ETH Zürich, “1.5 °C Degrowth Scenarios Suggest the Need for New Mitigation Pathways,” Nature Communications, vol. 12, no. 1, 1, Nature Publishing Group, 05/11/2021, p. 2676

Third, there is no empirical evidence for the possibility of an absolute decoupling between GDP and aggregate material use5,6,7. The reduction of the latter is central for climate mitigation38, the reduction of environmental impacts5 and prevention of biodiversity loss39. Large-scale renewable energy deployment is unlikely to contribute to material use reduction5,6,7,34, as renewables have a considerably higher material footprint than fossil fuels6,34. This may also raise critical risks of metal supply shortages34. Further, material extraction drives conflicts with local communities around the world, especially in the global South34,40. In order to be more sustainable, the global material footprint would need to be significantly scaled down, to ~50 billion tonnes per year (recognising the limits of aggregate indicators5), which is highly unlikely to be compatible with growing GDP5,6,7,39. These three points justify considering the reliance upon high speed and scale of the renewable energy transition a substantial risk for feasibility and sustainability.

#### Extinction

Michael Klare 21, professor of peace and world security studies at Hampshire College and the author of "Resource Wars," "Blood and Oil," and "Rising Powers, Shrinking Planet: The New Geopolitics of Energy,” “Will there be resource wars in our renewable energy future?,” Salon, 5/31/21, https://www.salon.com/2021/05/31/will-there-be-resource-wars-in-our-renewable-energy-future\_partner/

Thanks to its very name — renewable energy — we can picture a time in the not-too-distant future when our need for non-renewable fuels like oil, natural gas, and coal will vanish. Indeed, the Biden administration has announced a breakthrough target of 2035 for fully eliminating U.S. reliance on those non-renewable fuels for the generation of electricity. That would be accomplished by "deploying carbon-pollution-free electricity-generating resources," primarily the everlasting power of the wind and sun.

With other nations moving in a similar direction, it's tempting to conclude that the days when competition over finite supplies of energy was a recurring source of conflict will soon draw to a close. Unfortunately, think again: while the sun and wind are indeed infinitely renewable, the materials needed to convert those resources into electricity — minerals like cobalt, copper, lithium, nickel, and the rare-earth elements, or REEs — are anything but. Some of them, in fact, are far scarcer than petroleum, suggesting that global strife over vital resources may not, in fact, disappear in the Age of Renewables.

To appreciate this unexpected paradox, it's necessary to explore how wind and solar power are converted into usable forms of electricity and propulsion. Solar power is largely collected by photovoltaic cells, often deployed in vast arrays, while the wind is harvested by giant turbines, typically deployed in extensive wind farms. To use electricity in transportation, cars and trucks must be equipped with advanced batteries capable of holding a charge over long distances. Each one of these devices usessubstantial amounts of copper for electrical transmission, as well as a variety of other non-renewable minerals. Those wind turbines, for instance, require manganese, molybdenum, nickel, zinc, and rare-earth elements for their electrical generators, while electric vehicles (EVs) need cobalt, graphite, lithium, manganese, and rare earths for their engines and batteries.

At present, with wind and solar power accounting for only about 7% of global electricity generation and electric vehicles making up less than 1% of the cars on the road, the production of those minerals is roughly adequate to meet global demand. If, however, the U.S. and other countries really do move toward a green-energy future of the kind envisioned by President Biden, the demand for them will skyrocket and global output will fall far short of anticipated needs.

According to a recent study by the International Energy Agency (IEA), "The Role of Critical Minerals in Clean Energy Transitions," the demand for lithium in 2040 could be 50 times greater than today and for cobalt and graphite 30 times greater if the world moves swiftly to replace oil-driven vehicles with EVs. Such rising demand will, of course, incentivize industry to develop new supplies of such minerals, but potential sources of them are limited and the process of bringing them online will be costly and complicated. In other words, the world could face significant shortages of critical materials. ("As clean energy transitions accelerate globally," the IEA report noted ominously, "and solar panels, wind turbines, and electric cars are deployed on a growing scale, these rapidly growing markets for key minerals could be subject to price volatility, geopolitical influence, and even disruptions to supply.")

And here's a further complication: for a number of the most critical materials, including lithium, cobalt, and those rare-earth elements, production is highly concentrated in just a few countries, a reality that could lead to the sort of geopolitical struggles that accompanied the world's dependence on a few major sources of oil. According to the IEA, just one country, the Democratic Republic of the Congo (DRC), currently supplies more than 80% of the world's cobalt, and another — China — 70% of its rare-earth elements. Similarly, lithium production is largely in two countries, Argentina and Chile, which jointly account for nearly 80% of world supply, while four countries — Argentina, Chile, the DRC, and Peru — provide most of our copper. In other words, such future supplies are far more concentrated in far fewer lands than petroleum and natural gas, leading IEA analysts to worry about future struggles over the world's access to them.

From Oil to Lithium: the Geopolitical Implications of the Electric-Car Revolution

The role of petroleum in shaping global geopolitics is well understood. Ever since oil became essential to world transportation — and so to the effective functioning of the world's economy — it has been viewed for obvious reasons as a "strategic" resource. Because the largest concentrations of petroleum were located in the Middle East, an area historically far removed from the principal centers of industrial activity in Europe and North America and regularly subject to political convulsions, the major importing nations long sought to exercise some control over that region's oil production and export. This, of course, led to resource imperialism of a high order, beginning after World War I when Britain and the other European powers contended for colonial control of the oil-producing parts of the Persian Gulf region. It continued after World War II, when the United States entered that competition in a big way.

For the United States, ensuring access to Middle Eastern oil became a strategic priority after the "oil shocks" of 1973 and 1979 — the first caused by an Arab oil embargo that was a reprisal for Washington's support of Israel in that year's October War; the second by a disruption of supplies caused by the Islamic Revolution in Iran. In response to endless lines at American gas stations and the subsequent recessions, successive presidents pledged to protect oil imports by "any means necessary," including the use of armed force. And that very stance led President George H.W. Bush to wage the first Gulf War against Saddam Hussein's Iraq in 1991 and his son to invade that same country in 2003.

In 2021, the United States is no longer as dependent on Middle Eastern oil, given how extensively domestic deposits of petroleum-laden shale and other sedimentary rocks are being exploited by fracking technology. Still, the connection between oil use and geopolitical conflict has hardly disappeared. Most analysts believe that petroleum will continue to supply a major share of global energy for decades to come, and that's certain to generate political and military struggles over the remaining supplies. Already, for instance, conflict has broken out over disputed offshore supplies in the South and East China Seas, and some analysts predict a struggle for the control of untapped oil and mineral deposits in the Arctic region as well.

Here, then, is the question of the hour: Will an explosion in electric-car ownership change all this? EV market share is already growing rapidly and projected to reach 15% of worldwide sales by 2030. The major automakers are investing heavily in such vehicles, anticipating a surge in demand. There were around 370 EV models available for sale worldwide in 2020 — a 40% increase from 2019 — and major automakers have revealed plans to make an additional 450 models available by 2022. In addition, General Motors has announced its intention to completely phase out conventional gasoline and diesel vehicles by 2035, while Volvo's CEO has indicated that the company would only sell EVs by 2030.

It's reasonable to assume that this shift will only gain momentum, with profound consequences for the global trade in resources. According to the IEA, a typical electric car requires six times the mineral inputs of a conventional oil-powered vehicle. These include the copper for electrical wiring plus the cobalt, graphite, lithium, and nickel needed to ensure battery performance, longevity, and energy density (the energy output per unit of weight). In addition, rare-earth elements will be essential for the permanent magnets installed in EV motors.

Lithium, a primary component of lithium-ion batteries used in most EVs, is the lightest known metal. Although present both in clay deposits and ore composites, it's rarely found in easily mineable concentrations, though it can also be extracted from brine in areas like Bolivia's Salar de Uyuni, the world's largest salt flat. At present, approximately 58% of the world's lithium comes from Australia, another 20% from Chile, 11% from China, 6% from Argentina, and smaller percentages from elsewhere. A U.S. firm, Lithium Americas, is about to undertake the extraction of significant amounts of lithium from a clay deposit in northern Nevada, but is meeting resistance from local ranchers and Native Americans, who fear the contamination of their water supplies.

Cobalt is another key component of lithium-ion batteries. It's rarely found in unique deposits and most often acquired as a byproduct of copper and nickel mining. Today, it's almost entirely produced thanks to copper mining in the violent, chaotic Democratic Republic of the Congo, mostly in what's known as the copper belt of Katanga Province, a region which once sought to break away from the rest of the country and still harbors secessionist impulses.

Rare-earth elements encompass a group of 17 metallic substances scattered across the Earth's surface but rarely found in mineable concentrations. Among them, several are essential for future green-energy solutions, including dysprosium, lanthanum, neodymium, and terbium. When used as alloys with other minerals, they help perpetuate the magnetization of electrical motors under high-temperature conditions, a key requirement for electric vehicles and wind turbines. At present, approximately 70% of REEs come from China, perhaps 12% from Australia, and 8% from the U.S.

A mere glance at the location of such concentrations suggests that the green-energy transition envisioned by President Biden and other world leaders may encounter severe geopolitical problems, not unlike those generated in the past by reliance on oil. As a start, the most militarily powerful nation on the planet, the United States, can supply itself with only tiny percentages of REEs, as well as other critical minerals like nickel and zinc needed for advanced green technologies. While Australia, a close ally, will undoubtedly be an important supplier of some of them, China, already increasingly viewed as an adversary, is crucial when it comes to REEs, and the Congo, one of the most conflict-plagued nations on the planet, is the leading producer of cobalt. So don't for a second imagine that the transition to a renewable-energy future will either be easy or conflict-free.

The Crunch to Come

Faced with the prospect of inadequate or hard-to-access supplies of such critical materials, energy strategists are already calling for major efforts to develop new sources in as many locations as possible. "Today's supply and investment plans for many critical minerals fall well short of what is needed to support an accelerated deployment of solar panels, wind turbines and electric vehicles," said Fatih Birol, executive director of the International Energy Agency. "These hazards are real, but they are surmountable. The response from policymakers and companies will determine whether critical minerals remain a vital enabler for clean energy transitions or become a bottleneck in the process."

As Birol and his associates at the IEA have made all too clear, however, surmounting the obstacles to increased mineral production will be anything but easy. To begin with, launching new mining ventures can be extraordinarily expensive and entail numerous risks. Mining firms may be willing to invest billions of dollars in a country like Australia, where the legal framework is welcoming and where they can expect protection against future expropriation or war, but many promising ore sources lie in countries like the DRC, Myanmar, Peru, and Russia where such conditions hardly apply. For example, the current turmoil in Myanmar, a major producer of certain rare-earth elements, has already led to worries about their future availability and sparked a rise in prices.

Declining ore quality is also a concern. When it comes to mineral sites, this planet has been thoroughly scavenged for them, sometimes since the early Bronze Age, and many of the best deposits have long since been discovered and exploited. "In recent years, ore quality has continued to fall across a range of commodities," the IEA noted in its report on critical minerals and green technology. "For example, the average copper ore grade in Chile declined by 30% over the past 15 years. Extracting metal content from lower-grade ores requires more energy, exerting upward pressure on production costs, greenhouse gas emissions, and waste volumes."

In addition, extracting minerals from underground rock formations often entails the use of acids and other toxic substances and typically requires vast amounts of water, which are contaminated after use. This has become ever more of a problem since the enactment of environmental-protection legislation and the mobilization of local communities. In many parts of the world, as in Nevada when it comes to lithium, new mining and ore-processing efforts are going to encounter increasingly fierce local opposition. When, for example, the Lynas Corporation, an Australian firm, sought to evade Australia's environmental laws by shipping ores from its Mount Weld rare-earths mine to Malaysia for processing, local activists there mounted a protracted campaign to prevent it from doing so.

For Washington, perhaps no problem is more challenging, when it comes to the availability of critical materials for a green revolution, than this country's deteriorating relationship with Beijing. After all, China currently provides 70% of the world's rare-earth supplies and harbors significant deposits of other key minerals as well. No less significant, that country is responsible for the refining and processing of many key materials mined elsewhere. In fact, when it comes to mineral processing, the figures are astonishing. China may not produce significant amounts of cobalt or nickel, but it does account for approximately 65% of the world's processed cobalt and 35% of its processed nickel. And while China produces 11% of the world's lithium, it's responsible for nearly 60% of processed lithium. When it comes to rare-earth elements, however, China is dominant in a staggering way. Not only does it provide 60% of the world's raw materials, but nearly 90% of processed REEs.

To put the matter simply, there is no way the United States or other countries can undertake a massive transition from fossil fuels to a renewables-based economy without engaging economically with China. Undoubtedly, efforts will be made to reduce the degree of that reliance, but there's no realistic prospect of eliminating dependence on China for rare earths, lithium, and other key materials in the foreseeable future. If, in other words, the U.S. were to move from a modestly Cold-War-like stance toward Beijing to an even more hostile one, and if it were to engage in further Trumpian-style attempts to "decouple" its economy from that of the People's Republic, as advocated by many "China hawks" in Congress, there's no question about it: the Biden administration would have to abandon its plans for a green-energy future.

It's possible, of course, to imagine a future in which nations begin fighting over the world's supplies of critical minerals, just as they once fought over oil. At the same time, it's perfectly possible to conceive of a world in which countries like ours simply abandoned their plans for a green-energy future for lack of adequate raw materials and reverted to the oil wars of the past. On an already overheating planet, however, that would lead to a civilizational fate worse than death.

#### AND biod loss---extinction

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

Even if this wasn’t a problem, there’s yet another issue we have to face up to – to do with clean energy itself. When we hear the phrase ‘clean energy’ it normally calls to mind happy, innocent images of warm sunshine and fresh wind. But while sunshine and wind are obviously clean, the infrastructure we need to capture it is not. Far from it. The transition to renewables is going to require a dramatic increase in the extraction of metals and rare-earth minerals, with real ecological and social costs. In 2017, the World Bank released a report offering the first comprehensive look at this question.18 Researchers modelled the increase in material extraction that would be required to build enough solar and wind utilities to produce an annual output of about 7 terawatts of electricity by 2050. That’s enough to power a bit less than half of the global economy. By doubling the World Bank figures, we can estimate what it will take to get all the way to zero emissions (not including a little bit of hydropower, geothermal and nuclear to top it off) – and the results are staggering: 34 million metric tons of copper, 40 million tons of lead, 50 million tons of zinc, 162 million tons of aluminium, and no less than 4.8 billion tons of iron.

In some cases, the transition to renewables will require a massive increase over existing levels of material extraction. For neodymium – an essential element in wind turbines – extraction will need to rise by nearly 35% over current levels. Higher-end estimates reported by the World Bank suggest it could double. The same is true of silver, which is a critical ingredient in solar panels. Silver extraction will go up 38% and perhaps as much as 105%. Demand for indium, also essential to solar technology, will more than triple and could end up skyrocketing by 920%.

And then there are all the batteries we’re going to need for power storage. To keep energy flowing when the sun isn’t shining and the wind isn’t blowing will require enormous batteries at the grid level. This means 40 million tons of lithium – an eye-watering 2,700% increase over current levels of extraction.

That’s just for electricity. We also need to think about vehicles. In 2019, a group of leading British scientists submitted a letter to the UK’s Committee on Climate Change outlining their concerns about the ecological impact of electric cars.19 They agree, of course, that we need to end the sale and use of combustion engines and switch to electric vehicles as quickly as possible. But they pointed out that replacing the world’s projected fleet of 2 billion vehicles is going to require an explosive increase in mining: global annual extraction of neodymium and dysprosium will go up by another 70%, annual extraction of copper will more than double, and cobalt will need to increase by a factor of almost four – all for the entire period between now and 2050. We need to switch to electric cars, yes; but ultimately we need to radically reduce the number of cars we use.

The problem here is not that we’re going to run out of key minerals – although that may indeed become a concern. The real issue is that this will exacerbate an already existing crisis of overextraction. Mining has already become a big driver of deforestation, ecosystem collapse and biodiversity loss around the world. If we’re not careful, growing demand for renewable energy will exacerbate this crisis significantly.

Take silver, for instance. Mexico is home to the Peñasquito mine, one of the biggest silver mines in the world. Covering nearly 40 square miles, the operation is staggering in its scale: a sprawling open-cast complex ripped into the mountains, flanked by two waste dumps each a mile long, and a tailings dam full of toxic sludge held back by a wall that’s 7 miles around and as high as a fifty-storey skyscraper. This mine will produce 11,000 tons of silver in ten years before its reserves, the biggest in the world, are gone.20 To transition the global economy to renewables, we need to commission up to 130 more mines on the scale of Peñasquito. Just for silver.

Lithium is another ecological disaster. It takes 500,000 gallons of water to produce a single ton of lithium. Even at present levels of extraction this is causing real problems. In the Andes, where most of the world’s lithium is located, mining companies are burning through the water tables and leaving farmers with nothing to irrigate their crops. Many have had no choice but to abandon their land altogether. Meanwhile, chemical leaks from lithium mines have poisoned rivers from Chile to Argentina, Nevada to Tibet, killing off whole freshwater ecosystems. The lithium boom has barely started, and it’s already a catastrophe.21

And all of this is just to power the global economy by 2050. Things become even more extreme when we start accounting for growth into the future. As energy demand continues to rise, material extraction for renewables will become all the more aggressive – and the more we grow, the worse it will get. Even after achieving a full energy transition, to keep the global economy growing at projected rates would mean doubling the total global stock of solar panels, wind turbines and batteries every thirty or forty years, for ever.

It’s important to keep in mind that most of the key materials for the energy transition are located in the global South. Parts of Latin America, Africa and Asia are likely to become the target of a new scramble for resources, and some countries may become victims of new forms of colonisation. It happened in the sixteenth, seventeenth and eighteenth centuries with the hunt for gold and silver from South America. In the nineteenth century, it was land for cotton and sugar plantations in the Caribbean. In the twentieth century, it was diamonds from South Africa, cobalt from the Democratic Republic of Congo, and oil from the Middle East. It’s not difficult to imagine that the scramble for renewables might become similarly violent.

If we don’t take precautions, clean energy firms could become as destructive as fossil fuel companies – buying off politicians, trashing ecosystems, lobbying against environmental regulations, even assassinating community leaders who stand in their way, a tragedy that is already unfolding.22 This is important. Progressives who promote the idea of a Green New Deal or other plans for rapid energy transition also tend to promote values of social and ecological justice. If we want the transition to be just, we need to recognise that we cannot increase our use of renewable energy indefinitely.

Some hope that nuclear power will help us get around these problems – and surely it will need to be part of the mix. But nuclear comes with its own constraints. The main problem is that it takes so long to get new power plants up and running that they can play only a small role in getting us to zero emissions by the middle of the century. Even in the longer term, some scientists worry that nuclear can’t be scaled up beyond about 1 terawatt.23 Moreover, if for whatever reason we don’t manage to stabilise the climate – a real possibility – nuclear sites will be vulnerable to severe storms, rising seas and other disasters that could turn them into radiation bombs. With climate breakdown bearing down on us, relying too much on nuclear could become a dangerous gamble.

As for fusion power – the running joke is that engineers have been saying it’s a decade away for about six decades now. While we have managed to create successful fusion reactions, the problem is that the process requires more energy than it produces. A big fusion experiment presently under way in France may be close to solving that problem (and that’s a big maybe), but even the most optimistic projections indicate that it won’t happen for another ten years. It would take another decade after that to get fusion power to the grid, and many more decades to scale it up. So while the prospects are exciting, the record so far is not encouraging, and in any case the timeline is too long. We may have fusion power sometime this century, but we certainly can’t rely on it to keep us within the safe carbon budget. Without a miraculous technological breakthrough, the energy transition is going to need to focus mostly on solar and wind.

None of this is to say we shouldn’t pursue a rapid transition to renewable energy. We absolutely must, and urgently. But if we want the transition to be technically feasible, ecologically coherent and socially just, we need to disabuse ourselves of the fantasy that we can carry on growing aggregate energy demand at existing rates. We must take a different approach.

The planet remade

In the face of this evidence, those who insist on continued growth have been turning to increasingly outlandish ideas – not just BECCS but a growing menu of science-fiction techno-fixes based on large-scale geoengineering. Most of these schemes are so difficult and expensive to implement that you might as well just swallow the cost of actually reducing emissions instead. But there’s one that stands out from the crowd, and which has attracted significant attention. It’s called solar radiation management.

The idea is to use a fleet of jets to inject aerosols into the stratosphere, forming a giant veil around the Earth to reflect sunlight and therefore cool the planet. It’s relatively cheap and easy to do. So easy, in fact, that scientists worry that rogue agents – say, a meddling billionaire or a desperate island state that’s about to go underwater – could pull it off single-handedly. A number of governments are commissioning research on solar radiation management, and the idea has been celebrated by fossil fuel executives who see it as a way to preserve their business model.

But it’s not without its risks. Existing models suggest it could end up tearing holes in the ozone layer, slow photosynthesis to the point of decreasing crop yields, and irreversibly alter global rainfall patterns and weather systems – mostly to the detriment of the global South. Jonathan Proctor, a scientist who studies solar radiation management, says ‘the side effects of treatment are as bad as the original disease’. Janos Pasztor, another expert in this field, points out that the consequences could end up being even worse than we’re able to predict: ‘The global atmosphere is unbelievably complex … we have advanced computer modelling with supercomputers, but we still don’t really know how to model it.’24

Perhaps the biggest problem, though, is that aerosols don’t last long in the stratosphere, so for the plan to work that fleet of jets would have to be at it constantly. And if for whatever reason they stopped, we’d be in real trouble: global temperatures would shoot up again at a rapid pace, rising several degrees within a single decade. This sudden heating, known as ‘termination shock’, would leave countries with little time to adapt. Ecosystems would fall under tremendous strain and huge numbers of species would be wiped out.25 Scientists regard this approach to be too risky to implement, and – like all geo-engineering schemes – a dangerous distraction from the objective of cutting emissions fast.

It’s worth pausing to reflect on the growing fascination with geoengineering. What’s interesting about it is that it embodies the very same logic that got us into trouble in the first place: the idea that the living planet, rendered as mere ‘nature’, is nothing but a set of passive materials that can be subdued, conquered and controlled. Geo-engineering represents dualism taken to astonishing new extremes, unimaginable by Bacon and Descartes, where the planet itself must be bent to the will of man so that capitalist growth can continue indefinitely. The fatal flaw of geo-engineering is that it seeks to solve the ecological crisis with the very same thinking – the very same hubris – that created it in the first place. But perhaps more immediately, the problem with geo-engineering is that it is ecologically incoherent. Solar radiation management is only a partial response to the crisis we face. It would do nothing to slow the pace of ocean acidification, or deforestation, or soil depletion, or mass extinction. And this brings us to the next point.

Out of the frying pan, into the flames

Let’s pretend, just for the sake of argument, that none of this was a problem. Put aside the evidence for a moment and imagine that we somehow manage to achieve a rapid transition to clean energy while still growing the global economy, and that we can continue growing energy demand indefinitely without worrying about the material extraction it will entail or the pressure it will place on already-exploited regions of the world. Let’s say we invent fusion power tomorrow and scale it up in a decade. Surely such a scenario meets the requirements for green growth, right?

The problem with this vision is that it misses one key, unavoidable point: emissions are only one part of the crisis. In addition to climate breakdown, we are already overshooting a number of other planetary boundaries, driven by ever-increasing extraction from the Earth. The problem isn’t just the type of energy we’re using; it’s what we are doing with it.

Even if we had a 100%-clean-energy system, what would we do with it? Exactly what we are doing with fossil fuels: raze more forests, trawl more fish, mine more mountains, build more roads, expand industrial farming, and send more waste to landfill – all of which have ecological consequences our planet can no longer sustain. We will do these things because our economic system demands that we grow production and consumption at an exponential rate. In fact, the whole idea behind using clean energy to power a ‘green growth’ system is so that we can keep growing material production and consumption. Otherwise why would we need to keep growing energy demand?

Switching to clean energy will do nothing to slow down all these other forms of ecological breakdown. Escaping the frying pan of climate disaster doesn’t help us much if we end up hopping into the flames of ecological collapse.

#### b) They’re ADDITIVE NOT COMPETITIVE

Mastini et al. 21, ICTA-UAB, Universitat Autònoma de Barcelona, “A Green New Deal without Growth?,” Ecological Economics, vol. 179, 01/01/2021, p. 106832

Degrowth scholars reject also the assumption that the deployment of renewable energy is sufficient on its own to displace fossil fuels in energy production. Historically, new energy sources have added more energy without removing older sources: for instance the discovery of oil as an energy source has not replaced coal, but simply added to growing coal use (Fressoz and Bonneuil, 2013). Historical patterns suggest that past ‘energy transitions’ should be more accurately described as ‘energy additions’ (York and Bell, 2019). The average trend in many nations around the world over the past 50 years shows that each unit of electricity generated by non fossil-fuel sources displaced less than one-tenth of a unit of fossil-fuel-generated electricity (York, 2012). Hence, in the context of climate change mitigation, some degrowth advocates have proposed – along with a decline in energy consumption at the societal level – a cap on the total emissions that a country is allowed to generate (Kallis, 2015; Marcellesi, 2012; Daly, 2013).

#### c) LOWER EROI

Mastini et al. 21, ICTA-UAB, Universitat Autònoma de Barcelona, “A Green New Deal without Growth?,” Ecological Economics, vol. 179, 01/01/2021, p. 106832

The degrowth literature also questions the suitability of renewable energy to fuel economic growth. GDP growth is driven by an increase in energy use derived from energy-dense sources that are abundant and cheap (Kallis and Sager, 2017). Consequently, to ensure economic growth in the long run it is necessary to increase energy supplies and/or the rate of energy efficiency (Warr and Ayres, 2010). However, the EROI (the ratio of the amount of usable energy delivered from a particular energy resource to the amount of usable energy used to obtain that energy resource) for renewable energy sources – between 10:1 and 20:1 – is lower than that of fossil fuels (Murphy and Hall, 2010). Capellán-Pérez et al. (2018) simulate that if renewables increased from 15% to 50% by 2050 average EROI would drop to 3:1 when accounting for the energy required to extract and build the infrastructure, which is less than the 11:1 deemed necessary for a growing economy (Fizaine and Court, 2016).

#### Even if lifetime EROI is positive, civilizational metabolic costs of the transition aren’t compatible with growth.

--RES= renewable energy

--FF = fossil fuels

--EROI = Energy Return on Energy Invested

Carlos de Castro & Iñigo Capellán-Pérez 20, Research Group on Energy, Economy and System Dynamics, Escuela de Ingenierías Industriales, University of Valladolid, “Standard, Point of Use, and Extended Energy Return on Energy Invested (EROI) from Comprehensive Material Requirements of Present Global Wind, Solar, and Hydro Power Technologies,” Energies, vol. 13, no. 12, 12, Multidisciplinary Digital Publishing Institute, 01/2020, p. 3036

One of the open debates of greatest importance is whether the RES with higher potential have a sufficient EROI to maintain the energy “metabolism” of a large and complex civilization, such as the industrial-one. In fact, a favorable EROI over the long-term has been associated in fields such as biology or anthropology as a key driver of increasing complexity and evolution for plants, animals and humans [37,38,39,40]. However, the question on the minimum EROI for human societies remains arduous and elusive in the literature [13,38,41,42]. It has been indirectly approached in the literature through the comparison with FF under the logic that RES were found to have an EROI level at least as high as the one characterizing FF, then it could be assured that RES could also fuel complex modern societies.

On the one hand, those RES with a higher potential (i.e., wind, solar) have been generally found to have lower EROI standard (EROIst) than FF, especially when incorporating the energy costs of dealing with their variability [19]. However, some recent works have found that at the electricity generated level, the EROI of FF declines substantially, making that the EROI of RES could be, nowadays, in fact, better than the one generated by FF [16,33,43]. However, the comparison is not straightforward. Brockway et al. [16] use an input–output extended approach for estimating the yearly EROI of all aggregated FF at a global level without accounting for capital investments, which prevented the application of the same method for RES (hence, performing the comparison through literature review). Raugei [33] and Raugei and Leccisi [43] refer to some FF particular cases at a national level, taking, as a timeframe, the full lifetime of the power plants at the point of use level. It should also be taken into account that static EROI computations (over the lifetime) are not able to capture dynamic issues inherent to the dynamic nature of the energy transition, such as the requirement of up-front investments for the installation of new RES power plants [3] or the decreasing historical trend in the EROI of FF [16,19,44,45].

In this work, we contribute to this ongoing debate by estimating the current global EROI over the lifetime for the five RES energy technologies assessed to have the highest theoretical potential for electricity generation (solar Photovoltaic (PV) and Concentrated Solar Power (CSP), wind onshore, wind offshore and large hydroelectricity) [11,46]. We compute the EROI at standard or primary and point-of-use or final, and estimate the EROI at extended boundaries (full-system level). This approach allows us to identify those steps where more energy investments are required, as well as a consistent inter-comparison between the EROI levels of different technologies.

Two main novelties are applied with relation to the current state-of-the-art. First, an extensive and comprehensive literature review is performed in order to collate internally consistent data about the material requirements of each technology. In the cases where published data for an element/phase of the manufacture/installation of the technology was not found, the material requirements have conservatively been estimated from available data from other technologies (instead of being assumed 0 as most commonly performed in the literature). Second, we focus on performance parameters of real systems, globally, which contrasts with the widespread approach in the literature applying theoretical assumptions for modeling RES systems and/or focus on particular plants or countries (a method that frequently leads to “cherry picking”), which has been shown to overestimate the performance of real technologies and systems [25,47,48,49,50,51,52,53,54].

This work documents in detail the assumptions and data used to estimate the material and energy investments to install, operate, and maintain new RES infrastructures used in the MEDEAS modeling framework [3,55,56]. In this framework, the computation of the “static” (over the lifetime) EROI at three levels (standard, point of use, and extended) of the different energy technologies is an intermediate step to consistently integrate the mineral and energy requirements of RES in the wider modeling framework, able to represent the dynamic nature of the energy transition, as shown in a previous analysis on dynamic EROI based at the standard level [3]. This work reports updated and original results based on a more detailed lifecycle analysis, which have still not integrated in the MEDEAS models.

Section 2 overviews and compares the different definitions of EROI in the literature and Section 3 covers the methodology applied to estimate the EROI levels in this work. Results are presented and discussed in Section 4 and Section 5, respectively, and Section 6 concludes.

2. Overview of EROI Definitions and Their Implications for Society

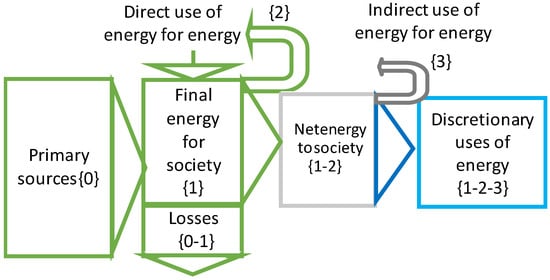
A diversity of different methods to estimate the EROI of a given technology, energy resource, or full energy system exists in the literature, according to different criteria to select the system boundaries and interpret which is the energy “usable” by the society, different definitions, etc. [3,16,29,32,33].

In this work, we estimate the EROI at the three boundaries most common in the literature: the EROI standard or primary (EROIst, Equation (1)), EROI at the point of use or final (EROIfinal, Equation (2)) and EROI extended (EROIext, Equation (3)). The EROIst includes the on-site and offsite (i.e., energy needed to manufacture the devices and systems used later on site) energy requirements to get the energy (e.g., build, operate, and maintain a power plant). As the energy investments are usually computed in “primary” energy terms and the energy delivered is computed in final terms, a “quality” correction factor (g) is typically used to compare different technologies and sources [Note that the authors have elsewhere (cf. [3]) defined a different EROIst (between the classical EROIst used here and the EROIfinal) applied to the system level, including the energy investments associated to the management of renewable energy sources (RES) variability, as well as considering that the real useful energy for the society is the one reaching the consumers rather than the one delivered at the mouth-gate of the power plants]. The EROIfinal includes the energy costs to get and deliver the energy carrier to the point of use of society (e.g., refining, transportation, etc.). The EROIext includes the energy required to get and deliver a unit of energy (EnUdirect), as well as the indirect energy (EnUindirect, or supply chain energy investment in input-output (IO) terminology) required to produce the machinery and devices used to build, operate, and maintain a power plant or a transportation facility (tank truck, pipeline, etc.), as well as the energy required for exploration, investment, communication, labor, etc. Hence, the EROIext is the most significant EROI type, given that the discretionary uses of energy are the relevant ones at societal level.

Text

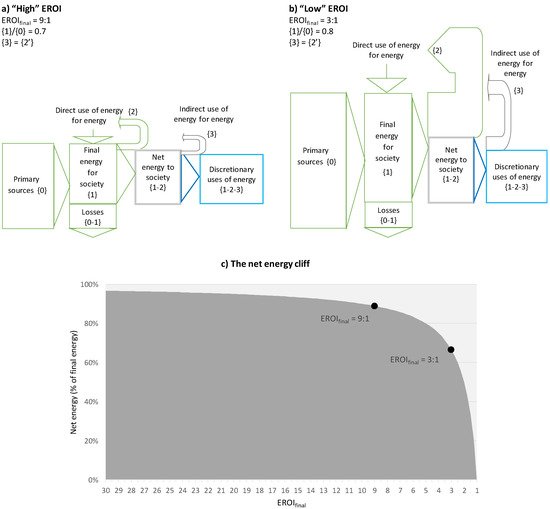
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Figure 1 shows graphically the three aforementioned definitions of EROI (standard, point-of-use or final and extended) based on a flow chart.



Energies 13 03036 g001 550Figure 1. Energy flux from primary material sources of energy {0} to discretionary uses of energy. EROIst = ({0}/g)/{2} (EROI standard, being “g“ a correction factor to convert “primary” to final). EROIfinal = {1}/{2′} (EROI final, where {2′} includes the direct use of energy to bring it to the user) and EROIext = {1}/({2’+3}) (EROI extended, all the terms at final and user phase). Note that the relevant energy for a society is the blue box (discretionary uses of energy), but primary sources of energy, and the other boxes, are relevant for environment issues because they are always taken/used in the biosphere (see reference [3] for more details).

Figure 2 shows the implications for an energy system that maintains the same discretionary energy flow when the EROIfinal decreases from 9:1 to 3:1, even with less relative losses (greater factor {1}/{0}). To achieve the same level of discretionary uses of energy with a lower EROI of the system, the economic sectors related to energy production and the primary energy sources to be extracted and processed increase substantially (final energy processed by society increases 2.33 times in the example depicted in Figure 2).



Energies 13 03036 g002 550Figure 2. A comparison between two hypothetical societies with the same energy flow available for discretionary uses {1-2′-3} (blue box) but with different EROIfinal and relative losses ({0-1}/{1}). The size of vertical arrows is at scale. (a) EROIfinal = 9:1, {1}/{0} = 0.7, assuming indirect energy use equal to direct one (see Section 3); (b) EROIfinal= 3:1, {1}/{0} = 0.8, indirect energy used equal to direct one ({2′} = {3}); (c) shows the resulting share of net power vs. gross power in the net energy cliff.

Few works have, to date, dealt with the intricate issue of the minimum EROI to sustain modern complex societies. Different works, applying different methodologies [13,41,42], have suggested that a minimum EROIst of the system > 10–15:1 is required to sustain advanced industrial societies. However, these estimations are approximates being subject to important limitations, such as the reliance on prices of energies and, in some cases, are just educated guesses without calculations backing them. Hall et al. [38] went a step forward, finding that a minimum of EROIst = 3:1 for oil and liquid biofuels is required to reach the final consumer in the USA. Other studies, such as Brandt [57], have approached the topic from a more theoretical point of view. Moreover, these estimates do not reach the EROIext, which is the relevant boundary at system level. In fact, although an energy technology with EROIext >1:1 is a net source of energy for the society, a complex modern society with an EROIext very close to 1:1 would still not be viable due to at least four reasons:

A low EROIext means that the energy metabolism ({0}, {1}, {2}, and {3}) represents a substantial part of the economy. Since each energy flux requires capital and workers, in that case the society allocates most parts of its capital and workers to the energy system, and not the discretionary uses. Therefore, a much lower diversity of jobs and enterprises can be attained in these conditions and the result is a much simpler society (as e.g., in pre-industrial times with most workers in the primary sector and very few in the tertiary sectors). In fact, there is an “EROI minimum”, below which a complex society tends to disappear or evolve towards simpler organizational forms [38,39,58]. In fact, when the EROI approaches 1:1, the capacity installed (and, hence, the primary energy required) tends to infinity if the same level of net energy is to be maintained (see Equations (9)–(11) in Capellán-Pérez et al. [59]).

The environmental impact depends on factors, such as the type of the energy resource (e.g., pollution and climate change caused by FFs’ combustion) and the size of the energy system (e.g., mining impacts, material residues, land-use, co-optation of fluxes of the biosphere—wind, biomass, etc.). Hence, for the same discretionary uses of energy, a lower EROI means larger environmental impacts and the need to divert a larger share of the final energy from discretionary uses to “defensive” costs [60].

Societies require a “security buffer” (i.e., buy “insurance”), to be able to overcome unexpected events, such as accidents or natural disasters (e.g., earthquakes).

Human inequality makes the metabolic system less efficient (in the real world, part of the discretionary energy uses will always be metabolically “useless”, such as luxuries of rich or corrupted people), so again, the supply of “useful” discretionary uses (food, domestic, education, etc.) requires an EROIext >1.

There is a critical additional reason in the context of the energy transition given that it will require the temporary fast growth of RES sources and the dismantling of the FF they replace. In this situation, the EROI of the full system will temporarily be well below the weighted average of the static EROI of the technologies and their supporting systems (e.g., grids, storage, etc.), as shown in [3]. Noteworthy, in a society where population and energy per capita are growing, this phenomenon of “energy trap” will be aggravated.

It has also to be highlighted that a minimum EROI to maintain a sustainable modern complex society cannot be established, precisely given that the reduced availability of discretionary energy as intermediary operations become less efficient is a gradual non-linear process with increasing and cascade consequences over time. Hence, it can also be useful to think about ranges and increasing levels of risk (see, e.g., discussions in Brandt [57] and around Figure 9 in [3]). This minimum EROI depend also ultimately on social decisions, depending on how each society decides to allocate the available resources in case of decreasing EROI between investments and consumption taking into account also social inequalities. See the Discussion section in this paper for our views on how to approach this issue in further research.

3. Methodology

This section documents the estimation of the current global EROI over the lifetime at three distinct boundaries (standard or primary, point-of-use or final and extended) for the five RES energy technologies assessed to have the higher theoretical potential for electricity generation (solar PV and CSP, wind onshore, wind offshore, and large hydroelectricity).

This section starts with the selection of the representative technologies (Section 3.1), follows with the definitions of EROI used at different boundaries (Section 3.2) and the material requirements to build, operate, and dismantle each RES technology power plant (Section 3.3). The details for the estimation of the EROI of each RES technology studied are collated in Appendix A and Appendix B.

3.1. Selection of Representative Technologies

In general, a “representative” technology is selected for each alternative technology on the basis of their current and the near future expected performance. Table 1 shows the selected representative technologies as well as the main references considered in this work for their material intensities. For the case of solar PV, a weighted average is computed for some minerals taking into account the current share of PV sub-technologies. Supplementary Material collates the material intensity for each technology and gives references and detailed comments. Current global average mineral recycling rates correspond to the share of recycled content (RC) in the fabricated metal from [61] (see Supplementary Material). Material losses in the gate-to-gate phase are conservatively estimated (see also Appendix C about conservative assumptions) (being recycled for other uses or not).

Table 1. Representative alternative technologies and main references considered for their material intensities. See Supplementary Material for details.

[TABLE OMITTED]

3.2. EROI Computation as a Function of the System Boundaries

3.2.1. EROI Expressions

Equations (4)–(6) show the gross standard, point-of-use or final and extended EROI expressions over the lifetime of the power system (plant or storage facility):

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where:

Eout,pp: electricity produced by the power plant.

Eout,consumer: electricity delivered to the consumer.

Capacity power: nominal capacity power considered: 1 MW.

CF: capacity factor (dimensionless), the ratio of the actual electrical energy output over a given period of time to the maximum possible electrical energy output over the same period.

L: operational lifetime of the power system in seconds.

OL: operational electricity losses for each technology are estimated as a share of the electricity output of the power plant at the inverter or transformer meter, including local distribution grid losses to the transmission grid, operational shutdown losses, and expected degradation of the power plant. Double accounting with real CF is avoided by estimating the net future expected degradation, taking into consideration that most RES power plants are very young.

TDL: the transmission and distribution losses in the grid as a share of the electricity output of the power plant. They represent the losses from the transformer or inverter of the power plant to the final consumer. TDL = 0 for EROIst and TDL = 0.092 for EROIfinal and EROIext (based on the ratio of power plant net production of electricity at global level and the total electricity consumed in 2015. The electricity final consumption in 2015 was 1737 Mtoe and the net electricity production of the power plants was 1913 Mtoe (2091 Mtoe gross production—178 Mtoe self-consumption of electricity) [72]. Hence, TDL = 1 − 1737/1913 = 0.092. Final consumption to gross production losses were thus: 1 − 1737/2091 = 0.169; therefore, the electrical global mix in 2015 had OL = 1 − (1 − 0.169)/(1 − 0.092) = 0.085).

SC: electricity self-consumption of the facility from the grid for auxiliary devices (lights, pumps, motors, etc.). For EROIfinal, the TDL from the grid to the facility are considered equal to the TDL from the facility to the consumer (here, the consumer is the power plant).

EnUNew cap: Final Energy Used (Joules) for the construction phase of the new installed capacity (cradle to end gate). We further divide the EnUNew cap in three components (CtoG, GtoG and GtoE) to adapt to the data availability of material requirements in the construction phase (see Section 3.2.2 and Appendix A): EnUNew capCtoG is the embodied energy in the Raw/resource to the Suppliers chain (cradle to gate in life-cycle analysis (LCA) terminology), EnUNew capGtoG is the embodied energy from the suppliers to the finished products of the power plant or the Manufacturing phase (gate to gate phase), and EnUNew capGtoE is the embodied energy in the Erection of the power plant.

EnUO&M: final energy used (Joules) in the operation and maintenance (O&M) of the installed capacity in their lifetime.

EnUDecom: final energy used (Joules) for decommissioning those infrastructures that have ended their lifetime. A 10% of the EnUNew cap is assumed for all technologies following [73] due to the lack of relevant global data. Other studies use a 50 to 100% of the site preparation energy costs (see Kis et al. [74]), which deliver similar results than the 10% of the EnUNew cap used here.

EnUG&S: final energy used (Joules) in grids, storage and other related infrastructures necessary to transport and manage the electricity to the point of use. For EROIst, EnUG&S = 0. For the sake of simplicity, we assign the O&M material costs of grids associated to the current mix as if they were independent of the technology (see Appendix B). However, due to the lower CF of variable RES relative to the current global mix and their variability, RES will likely require more new grids and other adaptation costs per MW as they scale up. Moreover, the storage per MW requirements (measured through their ESOI) are difficult to assign to a specific technology and have more sense in a dynamic transition scenario as done in [3].

EnUindirect: relative indirect EnU to direct EnU. We use 100%, i.e., EnUdirect = EnUindirect based on the comparison with meta-analysis that compare LCA versus Input–Output (IO) analysis for wind and solar (see Section 3.2.3).

EnUTra: final energy used for the transport of the materials: diesel and fuel oil (see Appendix B). Diesel and fuel oil are converted to primary energy with their respective factor hj estimated as the ratio between the well-to-wheels with the train-to-wheels (1.19 and 1.09 [75], respectively, see excel table in the supplementary material for references and details).

See next section for the method to assure consistency between primary energy inputs in the EnU computation and final energy outputs (g factor) for the three EROI indicators.

Figure 3 shows the conceptual representation of the energy inputs and output for power plants for variable renewable electricity generation and storage facilities, considering the different phases at different plant and system boundaries.

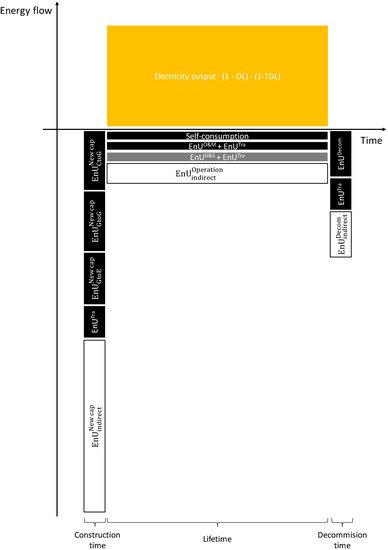


Figure 3. Conceptual representation of the energy inputs and output for power plants for variable renewable electricity generation and storage facilities. Black boxes represent energy investments considered at the EROIst phase, grey boxes the additional features incorporated into the EROIfinal, and the white boxes the indirect investments to compute the EROIext. Adapted from [3], not to scale.

3.2.2. Computation of Direct EnUs from Material Requirements

The energy used by the energy system for the construction of new capacity (EnUNew cap), O&M activities (EnUO&M), grids and storage (EnUG&S) is estimated multiplying the material intensity for each category and technology by the energy consumption per unit of material consumption from open sources (MJ per kg, average between virgin and secondary materials considering current recycling rates). In the construction phase, EnUNew capCtoG and EnUNew capGtoE are computed taking as a basis the material requirements, while due to data scarcity referring to the Manufacturing phase EnUNew capGtoG, we have assumed that this phase represents a fixed share for each technology of the Suppliers and Erection phases (see Section 3.3 and Supplementary Material for details and the rest of the phases). Data are cradle to the first gate (most data are from Hammond and Jones [76]); for the rest of the construction phase (first gate to final gate or manufacture phase), we take a constant share of the cradle to the first gate phase for each technology.

Figure 4 depicts the methodological process followed for computing the EnUs of the Construction phase (Cradle to Erection phase).

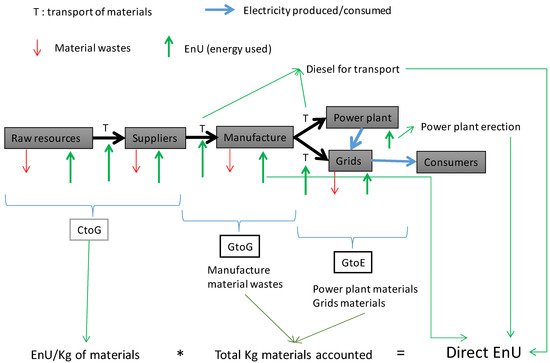


Figure 4. To estimate the direct energy used by the energy system to deliver energy (EnUdirect) we use data of energy intensities (MJ/kg) at the Cradle to Gate phase (including transport) from the materials used in the power plants and the operation and maintenance (O&M) of the grids and the losses of the manufacture phase for the material used in power plants. We add to this account the energy used in the power plant erection, the energy used in the manufacture phase and the diesel energy for transport in supplier gate to manufacture gate (GtoG) and manufacture gate to erection of the power plant (GtoE).

Material intensity data not available were conservatively estimated, e.g., assuming the same energy requirements per unit of material consumption for by-products than for the main mineral (e.g., Ga and Te). When no data on the energy consumption per unit of material consumption for recycled materials were found, it was assumed a value of 1/3 with relation to the virgin; this ratio was roughly estimated from available data for other minerals [76,77,78]. We review different items inter-comparing technologies to attain logical coherence (see details in Supplementary material).

As the basis of energy consumption is taken from literature that gives most data in “primary” terms and not in final terms, it is necessary to use a correction factor “g”.

Equation (7) represents the computation for each EnU (in final terms) for each energy technology i depending on the material intensity and energy consumption per unit of each material j consumption (in primary terms), weighted average taking into account current recycling rates (WECM(recycling rate)), at global system level.

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The g factor is estimated at global system level, therefore, it is in reality an additional factor in the denominator of the EROI of Equations (4)–(6) using all EnUs as if all their energy consumption inputs were in primary terms. For EROIst, we take g = 0.47; that is the result at global level of the efficiency of current power plants (we estimate this value from International Energy Agency (IEA) Sankeys [72] at the plant phase). For EROIfinal and EROIext, we must take not only the plant phase but the overall energy system; therefore, g = {1}/{0} (see Figure 1) that at current world level is g = 0.688 (from IEA Sankeys [72] comparing total primary energy with final energy) (see also [25] for a discussion on this issue). Note that during the transition to RES this factor will be dynamic; in the case of electrification of the economy based on RES it will tend to 1; hence, reducing progressively its importance in the EROI computation [3].

When the literature splits between electricity and diesel consumption for some materials (these are the main but not the only carriers of final energy consumption) we simply add both in Joules as if they were in “primary” terms and correct to “quality” or final after the total EnU obtained. Of course, diesel energy is also not a primary energy although to our knowledge the literature does not apply to this item a correction factor, considering that is minor in comparison with electricity, therefore, the literature is slightly infra-evaluating here the EnU costs. The factor h applied to diesel could be translated to primary terms following the same logic than for power plants. The h factor for diesel for transport can be estimated comparing the “train to wheels” energy intensity of 35.9 MJ/l (the final energy carrier) with the “well to wheels” energy intensity of 42.7 MJ/L (the primary equivalent terms) [75]. In this case, the h factor would be 1.19. Then, as seen in the Equation (5), this again is multiplied by “g” to convert again from primary to a global final average energy. As g·h <1, here we are acknowledging a better quality of electricity versus diesel to perform work.

3.2.3. Estimation of indirect EnUs for EROIext

The indirect EnU, supply chain energy investment in input–output (IO) terminology, corresponds to the energy required to produce the machinery and devices used to build, operate and maintain a power plant, the associated transportation facilities (tank truck, pipeline, etc.), as well as the energy required for exploration, investment, communication, labor, etc. While process based methodologies allow computing the direct energy investments (and can capture some indirect costs), the computation of the indirect energy investments requires the application of a comprehensive method, such as IO, allowing to account for all the supply chain effects.

Song et al. [79] use a hybrid detailed analysis for fiber composites for automotive parts, finding that the direct process analysis use 50.3 MJ/kg; IO indirect costs add 61.5 MJ/kg, and Transportation + Packaging + Other processes (TPO) use 57.9 MJ/kg. Assuming that half of the TPO energy used can be related to the IO chain, then the EnUindirect would be even greater than the EnUdirect. Guan et al. [80] find similar results for the embodied energy costs of the building sector in China. When comparing process analysis LCA with Hybrid IO based analysis, they find that the gap is approximately 100%, therefore EnUindirect ≥ EnUdirect for this study case.

Even indirect rebound effects of the energy savings from the technological efficiency improvement are estimated greater than the direct ones when applying the IO methodology to capture both in the industrial sector of Taiwan [81] showing that the chain investments are important here and concluding that energy saving potential could be overestimated if not accounted for the indirect costs.

Similar conclusions can be extracted from the data of MEDEAS model at global level: the average indirect final energy demand in business as usual scenarios (BAU) scenarios (2020–2050) is roughly the same than the direct demand for all the final energy carriers, including the global electricity sector ([82] & Personal Communication (Jaime Nieto Vega, 19–11–2019)). Therefore, for the present and the foreseeable future in BAU scenarios, the EnUindirect is equal or greater than the EnUdirect at the system level.

The literature studying the indirect EnUs for RES is to date scarce. Two meta-analysis for wind and solar technologies have concluded that the EROIst based in process analysis tend to give a much higher EROI than IO analysis. Kubiszewski et al. [20] find an average of EROI of 24 from process analysis against 12 for the IO for wind farms. This result is consistent with a case study for wind in UK showing that IO-based hybrid LCA gives 2.33 times more gCO2e/kWh embodied emissions than a process analysis LCA and, therefore, indirect emissions (and very likely energy embodied) are greater than the direct ones [83]. The same seems to apply for PV, [30] reported ratios of 1.6–3.1 × times greater the result from IO with relation to process analysis LCA in the literature (see their Table 2). Provided that the numerator of the EROI is not different for process analysis or IO, the differences could be attributed mainly to the more comprehensive account of indirect costs with the IO methodology. Hence, in this work we assume that the indirect investments of RES represent at least 100% of the total direct energy investments estimated.

Table 2. Performance factors considered in this study per technology. The capacity factors have been estimated from IRENA database [93] from the reported electricity production in 2015 and the average power between this year and the previous year to reduce the error due to the high annual capacity growth. See references in text and supplementary material.

[TABLE OMITTED]

3.3. Material Requirements and Performance Factors Per Technology

A literature review was performed in order to identify the material intensity (kg/MW) of six key technologies for the transition towards fully RES based energy systems: solar PV, solar CSP, wind onshore, wind offshore, and large hydroelectricity. New installed capacity, O&M and dismantling activities are considered to estimate the material requirements.

We reviewed the requirements of a total of 58 materials, of which 19 minerals (aluminum, cadmium, chromium, copper, gallium, indium, iron/steel, lead, lithium, magnesium, manganese, molybdenum, nickel, silver, tellurium, tin, titanium, vanadium, and zinc) used at the power plants. Selection criteria was made on the basis of considering all relevant materials to accurately estimate the embodied energy for the EROI estimation, as well as potential critical materials identified in the literature (e.g., [6,84,85,86,87]), as well as on specific assessments (see [56]). A literature review was performed in order to collate the most comprehensible possible data from open sources about material requirements for each technology. This approach differs from published meta-analyses, which tend to focus on the average values of the range of parameters found in the literature [14,17,19,20,88]. In the cases where published data for an element/phase of the manufacture/installation of the technology was not found, the material requirements have conservatively been estimated from available data from other technologies (instead of being assumed 0 as most commonly performed in the literature). For example, since no data about the material requirements for fences for CSP power plants were found, the data estimated by Prieto and Hall [21] for fences for PV were used; similarly, since no data about land clearing for PV were found, so data for land clearing for CSP was applied instead [25,89], etc. No energy inputs are derived from monetary costs, and in the case of uncertainty about potential double accounting, material requirements are conservatively not included (see Appendix C). Besides material requirements, water requirements for solar PV and CSP are also estimated.

The next step is the computation of energy requirements associated to the manufacture and transport between the first gate (first transformation of raw materials) to the end gate (GtoG) before the erection of the power plant phase (the manufacture of complex devices and machines, e.g., the energy costs to produce a turbine from rods, laminates, etc.). This estimation is very difficult because the literature is very scarce comparing with the previous step (cradle to first gate). We have reviewed the available literature and for the sake of simplicity, and as a first conservative approximation, we have taken values corresponding to the lower bound of the literature range (see Appendix A and Appendix C). Dahmus and Gutowski [90] report, for simple machining, that this energy cost could be around 4–24% of the raw material phase (cradle to first gate) (for instance transform Al rod into a frame to assemble a PV panel). Boustani et al. and Ciceri et al. [91,92] report around 20–40% for more complex machines (such as refrigerators, air conditioners, or other machines of similar complexity), and even >100% for very complex devices like microchips, computers or the silicon wafer of a PV panel [92]. Inverters, turbines, motors, or computers are complex machines that at this gate-to-gate phase have a very likely measurable impact, but to the knowledge of the authors, very few studies are published that quantify it for power plants in an open methodology. Hence, we conservatively assume a machining energy cost of 15% of the total construction phase for hydro, wind, and CSP technologies due to the use of many simple machining process (like a mounted structure), but also with important complex ones (like wind turbines). For PV power plants, we use a lower estimation (10%) given that this phase, being very well studied for the silicon wafer, has already taken it into account in the cradle to gate phase.

Moreover, industrial production generates significant amounts of scrap: when an amount of material enters a manufacture factory, not all is incorporated to finished products. The scrap could be 10–60% of the embodied material in finished products. Moreover, most of the machining processes require some virgin or pure material because the recycled scrap cannot be fully reused [90]. As the materials used in the power plant are estimated at the plant, the percent (%) scrap in the manufacturing phase not entering the same manufacturing facility after recycling must be accounted in the cradle to gate phase. To avoid any possible double counting, we conservatively consider 10% as the lower end of Dahmus and Gutowski [90] to increase in this ratio the total amount of materials in the construction phase and hence their associated energy costs.

In relation to the electric grids, we estimate the materials required for the O&M of the currently existing grid (see Appendix B).

Finally, the energy for transport of the GtoE phase considering all the materials used in the facility and the O&M of the grid is computed (see Appendix B).

The Appendix B describes also the methodology used to estimate the EnUNew cap, EnUO&M and EnUG&S for each technology. EnUNew cap is estimated from material requirements for all technologies. The EnUO&M has been calculated for CSP, PV, and large hydro using data on reparation or substitution for 11 materials, while for wind technologies it has been estimated as a share of the construction phase based in the replacement of the average whole parts of the turbines during the lifetime of the farm.

See Supplementary material for the detailed results, comments, and references per material and technology.

Table 2 reports the performance factors (current global average) per technology used in this study.

Given that RES are characterized by strong increases of new capacity per year, and that this new capacity represents a non-negligible share of capacity with relation to the one already installed, we estimate the real CF for a year t (CF(t)) by assuming that only half of the capacity installed during that year (Δcap) generated electricity at full power that year (gen(t)) (Equation (8)):

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Description automatically generated

The assumed lifetime of each technology is based in present global systems taking as reference the usual contracts of the operational life of the power plants and the system in our main literature studies for each technology. This lifetime is difficult to estimate because the average time in operation of the present power plants is very low due to the high recent growth of variable RES (we estimate: CSP = 7.2 years, PV = 3.8 years, Onshore Wind = 6.6 years, and Offshore Wind 4.4 years based in the capacity added in the history [93]). This parameter is hence subject to controversy (see for instance the discussion for PV from Ferroni et al. and the responses of Raugei et al. [26,31,100]). As the expected lifetime of these technologies is more than three times their current time in operation, it is difficult to estimate the average lifetime based in real numbers. The existence of failures—projects that do not reach the operational phase (or shut down after only a few years of operation) are usually not taken into account for the average lifetime (or the EnU costs incurred at system level)—prevents us from choosing the higher lifetime ranges collated in meta-analysis, because we are focused at global and historical real-data levels. For large hydro whose installed capacity grows at a much slower pace, we assume that the current average operational lifetime is half the lifetime considered. This is the reason why the power degradation assigned is only an estimation of the average power loss based in the % of dam failures in Table 2. For the rest, we take from Kis et al. [74] the annual degradation % of the power plants and estimate the already present power degradation based in the average operational time. The total expected power degradation in the lifetime minus the actual present degradation is the expected degradation in the pipeline that we use in Table 2.

For more methodological details for each technology, see Appendix B and Supplementary material.

4. Results

4.1. Current Global EROI of RES Technologies

Table 3 collates the obtained current global average standard, final, and extended EROI for the renewable electricity generation technologies studied in this work. We find EROIst levels of 28.4:1 (large hydro), 13.2:1 (wind onshore), 8.7:1 (wind onshore), 7.8 (PV), and 2.6:1 (CSP). Accounting for the transmission losses, the energy investments associated to the grids as well as the change from plant to full-system context implies a large gap between the three EROI boundary levels studied, a gap that other authors have also found for FFs (e.g., [16,33]). The energy investments associated to the O&M of the grids represent a relevant contribution, increasing around 9% (CSP), 19% (wind offshore), 30% (PV), and 40% (wind onshore) the embodied energy of the cradle to gate phase of each technology respectively (EnUNew cap + EnUO&M + EnUDecom + EnUTra following the notation of Equation (4)). In comparison, the refining and transport to final consumer of oil is typically < 15% [38]. We find EROIfinal levels of 13.0:1 (large hydro), 5.8:1 (wind onshore), 4.7:1 (wind onshore), 3.5:1 (PV), and 1.6:1 (CSP). The energy returns for each technology at the three boundary levels are large hydro > wind onshore > wind offshore > solar PV > CSP given that the same O&M for grids and indirect energy investments are assumed equally for all technologies. Finally, at extended level, large hydroelectricity continues to stand out, with high energy returns (6.5:1), followed by wind onshore (2.9:1), wind offshore (2.3:1), solar PV (1.8:1), and finally solar CSP (0.8:1). Hence, with an EROIext below 1:1, the CSP would in fact function rather as a storage device contributing to deal with short-term (hourly) variability (although at the cost of worsening the effects of seasonal variability [25]).

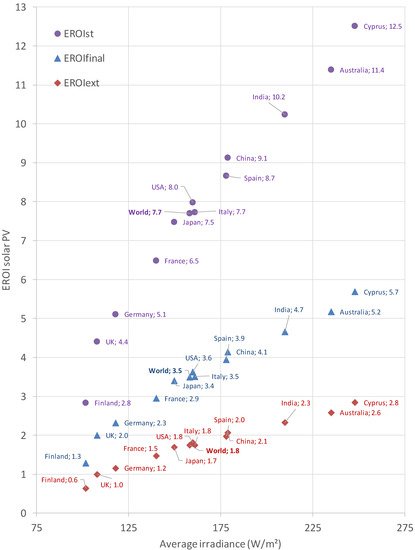
Table 3. EROI results. Current standard, final, and extended EROI for the renewable electricity generation technologies studied in this work. Performance factors and mineral recycling rates are set at current global average levels.

[TABLE OMITTED]

It should be acknowledged that the estimated global EROI current averages mask many regional differences depending on the quality of the resource. The next section takes the example of solar PV to illustrate how the EROI of the current electricity generation at the three boundaries estimated in this work may vary in different countries. We consider both big solar PV on land and rooftop given that we find that their EROI is ultimately quite similar, the lower requirement of material and energy inputs being compensated by a lower efficiency.

4.2. Geographically-Dependent EROI: Case Study for Solar PV

The RES availability and quality of their potentials inherently depend on geographical and climate characteristics (e.g., [10,101,102]), but also on the socioeconomic dimensions such as population density, which affects the density of required grids. However, to our knowledge, very few studies have attempted to date to estimate regional potentials of RES considering EROI levels [94,103]. Figure 5 shows an estimation of the different EROI levels of PV solar on land for a selection of countries at standard (EROIst), final (EROIfinal), and extended (EROIext) (gross) stages. This estimation is performed assuming that the global EROI is a weighted average of the installed capacity and the irradiance levels for the top-10 countries with more installed capacity at the end of 2016 [104]. These 10 countries together account for over 85% of the global installed capacity in that year. Two more countries are included to widen the scope of the analysis: Cyprus and Finland, which hold the maximum and minimum country-level average solar irradiances in the European Union [59]. We consider that the following factors vary for each country:



Energies 13 03036 g005 550Figure 5. EROI levels at standard (EROIst), final (EROIfinal), and extended (EROIext) stages of PV solar on land for the top 10 countries with more installed capacity, the global average, and Finland and Cyprus as holders of the minimum and maximum irradiance at European Union (EU) level. The current ighted global average for solar irradiance where power plants are installed is found to be ~160 W/m2.

average solar irradiance per country estimated applying a Geographical Information System (GIS);

a reduction of the average performance ratio over the park’s life cycle due to higher temperature in the tropics;

a more efficient use of the space in countries closer to the equator, which reduces the energy investments in the phases of cement/concrete, iron/steel low, gravel/roads, and site works (which approximately correspond to 20% of the EnUNew cap of solar PV);

the same EROI for big solar on land and rooftop for each country (see Section 4.1).

As sources, we use data collected in previous work [59] combined with Martín-Chivelet [105] for the land occupation as a function of the latitude. Progressively broadening boundaries and considering geographical factors significantly affects the results: EROIst ranges 2.6–12.5.1:1, EROIfinal 1.3–5.7:1, and EROIext 0.6–2.8:1. Only in countries of great insolation, such as Cyprus or Australia, the EROIext levels would be close to the current onshore wind average of 2.9:1. In other countries, such as Finland or UK, we find an EROIext ≤ 1:1.The efficiency of the solar PV located at the global-average irradiance (168 W/m2) would then need to increase by ~50% in order to reach the current EROI of onshore wind, which is challenged by thermodynamic limits (e.g., [106]). It should be also highlighted that countries can enjoy the energy returns of power plants while avoiding the energy investments through international trade. In fact, it has already been shown that rich countries considerably benefit from international trade to net import energy (and carbon) intensive products from other countries, such as the BRIICS (Brazil, Russia, India, Indonesia, China) [107].

4.3. Comparison of the EROIst of RES Technologies with the Literature

As discussed in Section 2, the comparison of the EROI values obtained in the present study with other studies is tricky due to the methodological discrepancies existing in the literature and the uncertainty associated to the data collection (see Appendix C, Appendix D, and Appendix E for more details). Still, we report the comparison of our obtained results for EROIst with the literature range found in the review papers and meta-analyses to show how far or near we are of other published studies. We also compare with the EROIst calculations from Dupont and Kis et al., [74,94,103] since this team follows, to the knowledge of the authors, a methodology that is the closest to the one developed here; therefore, the direct comparison of results is the most meaningful. However, for a direct comparison a harmonization process should be endeavored with relation to the assumptions and performance factors (CF, g factor, etc.).

Table 4 shows that our EROIst results are within but on the lower bound of the literature for the RES technologies excepting for CSP [14,20,34,74,94,103,108,109]. Two main reasons explain this: (1) few studies use so many materials for the different construction, O&M, and dismantling phases, and (2) it is customary in the field to use favorable performance factors, which overestimate the average of real systems (see discussion in [25]). For CSP, our results are even below the low bound of the published ranges because, likely due to their relative low capacity installed, most studies rely excessively in theoretical grounds (as was demonstrated in [25]) and not in performance factors from real power plants. In any case, as argued in Section 2, we recall that the standard boundary for EROI is not sufficiently relevant to analyze the implications of the energy transition.

Table 4. Comparison of the EROIst obtained in this work with the literature. “n” represents the number of the studies reviewed in meta-analysis studies. EROIst levels are not harmonized.

[TABLE OMITTED]

5. Discussion

We structure the Discussion section in two parts. First, a discussion on the potential role of future technological improvements to improve the EROI of the studied technologies in this study in the context of their likely large deployment in the next decades. Second, we give our views on how to properly take into account the effect of EROI for the energy transition and the potential implications we foresee.

5.1. On the Role of Future Technological Change

The EROIs computed in this study correspond to estimates for current RES technologies and power plants in operation. Future technological improvements may reduce the EnUs and/or improve the CF of the different RES technologies, as it has been happening in the last decades (e.g., increased cell efficiency and reduced wafer thickness in solar PV [31,110]). Since RES are expected to increase their share substantially in the next few decades, it is very relevant to assess to what extent future technological improvements and increase in mineral recycling rates may contribute to increase their current EROI levels. In fact, the recycling of materials generally requires less energy than their extraction from the mines (virgin), which holds true as long as the recycling rates do not approach 100% due to thermodynamic limits. Particularly, in the future there will be some very relevant factors, which will tend to offset potential technical improvements as the renewables progressively scale-up at large levels and gain a substantial share in the energy mix:

Additional energy investments and losses related with variability management of RES such as storage capacity (PHS, electric batteries, hydrogen, etc.), power-to-X, curtailment, and additional grids. The first three factors will tend to lower the EROI of the system due to the Energy Stored On energy Invested (ESOI) of the storage device, the increase of the transformation phases with associated transformation losses, and/or the diminishing effective CF of power plant being electricity curtailed. The fourth factor includes the substantial adaptation and expansion of the existing grids to cope with connecting the new RES power plants as well as helping to evacuate power when unevenly produced and demanded.

The effect of decreasing returns in the potential of renewables, i.e., after best places are occupied it is necessary to move to more uneconomical sites [94,103,111], phenomena that may be worsened in some cases by land availability constraints [59,112].

The increase in energy requirements for mineral processing related with ore grade decrease of minerals due to increased cumulated extraction [113,114,115].

Thermodynamic limits to the continuous reduction of required energy investments (e.g., related with limits to substitution).

Limits to recycling rates (other than thermodynamic): as aforementioned, most of the machining processes require some virgin or pure material because the recycled scrap cannot be fully reused [90].

The scarcity of some minerals in the future may drive the shift to more abundant minerals, which in turn are generally characterized by a lower performance (e.g., Ag instead of Al in mirrors, Nd in permanent magnets, Te in thin films, etc.) [63,86].

Thermodynamic limits from the side of generation. For example, the fact that there are absolute limits to the height of rotors for wind or the Benz law (modern large wind turbines already achieve peak performance coefficients in the range of 45–50%, which is pretty close to the limit of 59.26% [94])), or the limits in the conversion from sunlight to electricity, such as the Schokley–Queisser limit for single-junction solar cells. Although the latter limit could be overcome with multi-junction technologies, the key general question is how realistic it is, considering that the most sophisticated technologies—also related with the previous point—are really scalable at a significant level compared with total energy demand, or if, in the future, they will rather remain marginal.

Studies extrapolating the past evolution of EROI levels generally ignore all of the above factors and hence should be taken with care (e.g., [116]). Even studies that focus on past data are not totally reliable. For example, Louwen et al., [117], although they claim that all the PV systems analyzed include modules + inverter + mounting structure, in reality, the two more recent works (which seem to be largely driving their learning curve estimation, see their Figure 2b) correspond to (1) only PV modules, and (2) a solar rooftop system. Moreover, both of them use data from EU, not from China, where most production is located now.

Moreover, there is an additional issue related with the temporality of the transition, which will be especially relevant in the next few decades. Due to the fact that RES power plants, differently to FF ones, require large up-front costs and obtain delayed returns over the lifetime, a fast transition to RES would imply draining large shares of the energy available in order to sustain the energy transition. This means that, as shown in Capellán-Pérez et al. [3], which in fact is based on many of the assumptions and data reported here the EROI of the full system could temporarily be well below the weighted average of the static EROI of the technologies and their supporting systems (e.g., grids, storage, etc.). Hence, at system level, the fast penetration of renewables can lead to a situation of “energy trap”, i.e., a reduction in the discretionary energy arriving to society simultaneously with the increase in the consumption of primary energy [3,118]. Under this case, the efficiency of the full system measured as the primary to final energy ratio would worsen. Since some definitions, inputs and parameters are different in this work with relation to those used in Capellán-Pérez et al., [3] (here we perform a more detailed lifecycle analysis) in Appendix E we perform a harmonization of the results of both studies. The consistent comparison of the results obtained in both studies shows that the updated EROIst results presented in this work are lower (20–30%) for all the technologies, which reinforces the implications highlighted in the previous work [3] with relation to the potential scenario of “energy trap” during a fast energy transition. This phenomenon of “energy trap” would be aggravated in a context where population and energy consumption per capita are expected to continue increasing such as in the Green Growth paradigm.

Hence, the relevant feature is not the future EROI over the lifetime of each specific technology, but that of the full energy system in a dynamic, transitional way. Hence, the ultimate objective is to assess the potential implications that the dynamic EROI over time of the full energy system might imply for the thriving future societies (i.e., its implications for income, employment, etc., but also for dimensions more difficult to capture in quantitative modeling such as diversity in social functions). In this sense, it should be taken into account that a “sufficiently high” EROI is a necessary but not sufficient condition to achieve sustainable energy systems while maintaining high complexity in society. In particular, it does not give information about key aspects of the different energy technologies such as their environmental impacts (CO2 emissions, land occupation, etc.), social acceptance, future mineral availability, etc., as well as others such as cost effectiveness (although not totally being disconnected from energy effectiveness, cf. [119]). Although composite EROI indicators have been proposed to account for this (e.g., [60]), we believe that since sustainability is an inherent multi-dimensional concept its assessment has to be performed through a multi-dimensional set of indicators, being one of them the EROI.

It is noteworthy that most models used for advising policy (e.g., IEA, IPCC, national governments, etc.) neglect the energy investments related with the construction and operation of the RES power plants, as well as the implications on the full energy system [55,118,120]. Among the few models considering this factor are models published in the scientific literature with, unfortunately, little (if any) political incidence, such as GEMBA [121]; NETSET [122]; EETRAP [118]). The relation of EROI to net energy is non-linear (i.e., the “net energy cliff”), and consequently its impact can potentially be misjudged. Given the metabolic implications of the variation of the EROI of the system, assuring the consistency between physical investments (energy and materials) and economic investments seems a key precondition to ensure the robustness and viability of alternative sustainability scenarios, such as the Green Growth [123,124,125,126,127,128] or Post-Growth [129] scenarios.

We would like to conclude this section with a comment on the meaning of technological improvements and the relationship between economic (monetary) and biophysical (energetic and material) costs. Monetary cost reductions are typically identified with technological advances. For example, since the end of 2009, wind turbines prices have fallen by 30–40%, and solar PV module by around 80% [130] (and nearly 100× between the 1950s and the mid-2000s, more than any other energy technology in that period [131]). The levelized cost of electricity of solar PV (utility scale) has been estimated to have fallen by more than 60% between 2010 and 2016 [130]. However, in reality these historic cost reductions cannot be solely attributed to a reduction in the material and energetic intensities of a technology (technological improvement), given that they have also been critically affected by one-time financial (e.g., low interest rates to finance RES capital-intensive investments) and economic factors (e.g., economies of scale when increasing production, outsourcing to countries with less strict labor, environmental legislation, etc.). Additionally, the price of raw materials is subject to multiple influences (institutional framework, oligopolistic market structure, etc.) [132,133,134], which makes erratic their long-term evolution. For example, for the case of solar PV, it has been found that the reduction in average production cost and price of solar panels has been driven by factors, such as the reduction in the price of polysilicon, the increasing market penetration of lower cost firms from China, the increasing size of the facilities, and increases in industry investment, besides technological improvement, mainly in the form of the reduction in the use of polysilicon, and improvement of panel efficiencies [110,131]. Hence, a direct relationship between monetary costs and energy costs, or technological improvement, does not exist, although of course they are not totally independent [27,119].

Despite the aforementioned empirical evidences, the most common method used to represent endogenous technical change in energy–economy and integrated assessment models that inform energy planning and policy analysis is based on the extrapolation of historical learning curves (also known as experience curves) [2,130,131,135], which are a log–linear equation derived from empirical observations relating the unit cost of a technology to its cumulative installed capacity or electricity generated. A simpler version known as Moore’s Law treats time as the independent variable. This model is sometimes complemented by relating unit cost to cumulative expenditures for research and development, but it is, in any case, built under the assumption of perpetual cost reductions linked to increased production assuming that growth increases the likelihood of fundamental technological advances, incremental learning by doing, economies of scale in manufacturing, and standardization. However, in the era of a “full world” and over-exploited and degraded biosphere (“the global economy is now so large that society can no longer safely pretend it operates within a limitless ecosystem“ [136]), these dynamics cannot anymore be taken as granted in the future, which represents a paradigmatic change with relation to the past decades. “Natural resource flows are now the scarce factor, and labor and capital stocks are now relatively abundant. This basic pattern of scarcity has been reversed by a century of growth” [136].

5.2. Implications of Taking into Account the EROI for the Transition to RES

The first intuitive answer about the implications of taking into account the EROI of the RES during the energy transition can be given by the “net energy cliff”. Figure 6 shows the current global average EROI of each RES technology for electricity generation at the three boundaries studied in this study, represented as a share of the resulting share of net power vs. gross power in the net energy cliff. It can be seen that below levels of EROI < ~5–3:1, the share of net energy declines abruptly.

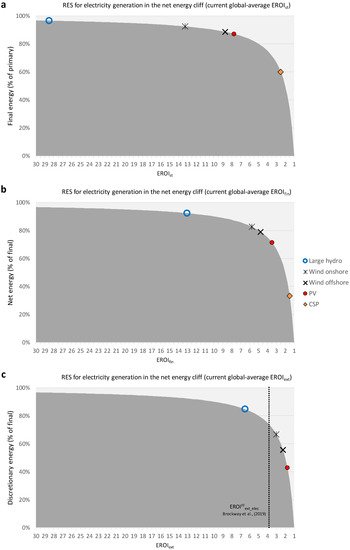


Figure 6. Current global average EROI of each RES technology for electricity generation at (a) standard; (b) final; (c) extended level represented as a share of the resulting share of net power vs gross power in the net energy cliff. CSP is not represented in figure (c) since its EROIext < 1:1. The figure (c) also shows the approximated value of 3.9:1 (black dotted line) for the global-average EROIext for fossil fuels-fired electricity re-estimated from Brockway et al. [16] to adapt of our methodology (see Appendix D for the details).

As aforementioned in the introduction, one of the open debates of greatest importance today in the context of the energy transition is whether the RES with higher potential have a sufficient EROI to maintain the energy “metabolism” of a large and complex civilization such as the industrial one. Given that, the estimation of a minimum EROI to maintain complex societies is a complex, and to date, elusive task involving both technical and societal issues, a large part of the literature has focused on the comparison with the EROI of FF as an indirect way of shedding light on this. In fact, in the case that RES were to be found to have an EROI level, at least as high as the one characterizing FF, then it could be assured that RES could also fuel complex modern societies.

However, the comparison of the EROI of RES at the extended boundary with the one of FF is far from being straightforward. To the knowledge of the authors, Brockway et al., [16] is the only study having computed the global average EROIext of FF at the electricity generation level. However, their input–output extended method is unsuitable for computing the EROI of RES given that it does not account for the energy associated to the capital investments (neither new capacities, decommission, nor new transmission lines required to move from EROI standard to point-of-use level). Although capital investments may represent a reduced part of the energy requirements for the case of an already extensively deployed industry, where most of the energy inputs are required in the O&M phase (as it can be assumed, not being so far from the situation of the current FF industry globally), for RES, the situation is exactly the opposite. Most energy investments are made upfront and the installed capacity is growing globally very fast. Although perfect comparability between both studies is not possible, we have made an effort to approximate the EROIext (gross) computed by Brockway et al., [16] for the aggregated FF to be roughly comparable with our method. When roughly accounting for the most relevant factors not considered in their study, we obtain a value of 3.9:1 (see Appendix D), which allows to conclude that their reported result of ~4:1 (gross EROIext) seems robust. Hence, it can be concluded that, very likely, the global average EROIext of variable RES is currently lower than those of FF for electricity generation.

This means that the current substantial lower power density (MWh/m2) [59,137] and higher material intensity (kg/MWh) [4,5] of variable RES, with relation to FF, make that the initial energy investment of RES weights more than the energy savings, due to the very low O&M energy requirements phase with relation to FF, where the situation is rather the opposite. The case of hydropower can be regarded as an exception given its very long lifetime (3–4 times for variable RES) and that although its power density is rather low, most parts of the surface is occupied by water “naturally” contained by valleys and mountains, and the built infrastructure is just concentrated in the dam.

Hence, of those RES with a higher techno-sustainable potential, the Figure 6c shows that only large hydroelectricity has currently a high EROIext clearly above the current global-average FF for electricity generation. Given that the techno-sustainable potential of large hydro is limited to less than double the current installed capacity (e.g., [138]), the transition to RES to supply the expected (increasing) energy demands will require large shares of the variable RES; hence, driving the EROI of the system to lower values, especially, as aforementioned, during the transition period before reaching a more stationary situation. Hence, to avoid driving the energy system to excessively low EROI levels, it is key that those uses that cannot be supplied by electricity, such as heat, are instead supplied directly by thermal technologies such as solar thermal, geothermal, and bioenergy in order to minimize energy conversions. Hence, there is a trade-off between the low EROI of RES for electricity with the strategy of managing variability through increasing the interconnectedness of the heat, cooling, transport, and electricity sectors [139] given that the latter introduces more conversions (i.e., losses) in the system. However, as previously highlighted, specific regional conditions are a key factor to take into account when designing the transition towards sustainable energy systems fully based on RES.

### AT: Sustainability---AT: Now Not Key

#### Now is key---the scale of the challenge makes it vital to move quickly.

Timothée Parrique 21, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne, “A response to Kenta Tsuda: Welcome to degrowth,” Timothée Parrique, 9/8/21, https://timotheeparrique.com/a-response-to-kenta-tsuda-welcome-to-degrowth/

If I understand him well, Kenta Tsuda agrees that degrowth might be necessary at some point (because he does acknowledge that there are absolute, material limits to production), but not today. This is a strange claim that goes against what we know about the biocrisis, starting with recent reports about global warming and biodiversity loss. These reports never bring good news, as often reminded by the recurrent calls by scientists demanding urgent action. Many of the problems are definitely getting worse, and any delay in addressing them will imply faster, more difficult changes in the future.

### AT: Sustainability---AT: Tsuda

#### Tsuda’s beef with degrowth is based on superficial misunderstanding---sustainability requires far more than carbon neutrality, even if the latter is attainable under economic expansion.

Timothée Parrique 21, Centre for Studies and Research in International Development (CERDI), University of Clermont Auvergne, “A response to Kenta Tsuda: Welcome to degrowth,” Timothée Parrique, 9/8/21, https://timotheeparrique.com/a-response-to-kenta-tsuda-welcome-to-degrowth/

I often complain about texts critical of degrowth being short. And they mostly are. The average degrowth detractor only affords a few paragraphs, often copiously sprinkled with conceptual slur. Collapse-porn addicts, Malthusian maniacs, prophets of climate despair, civilisation-haters, dirty hippies; closer to a rap battle than to an academic dialogue. Imagine my joy when I stumbled upon Kenta Tsuda’s “Naïve questions on degrowth.” Forgive my fetishism for size, but the text is huge: a 20-page read of almost 8,000 words. For someone interested in degrowth controversies, this is not a snack, it is a buffet. Unfortunately, it is a buffet where not all the food is safe to eat.

I have synthetised Kenta Tsuda’s text into seven queries, which I use to structure my response. (1) Why is economic growth problematic; (2) why is anti-consumerism important; (3) how to democratically determine what is socially valuable; (4) why is degrowth ecologically necessary; (5) how to organise a degrowth transition; (6) how to finance public budgets without growth; and (7) what does degrowth change in terms of power relations. In answering these, I am hoping to give readers a quick tour of the now abundant degrowth literature. And as the name “degrowth” hints, it all starts with understanding what economic growth is.

What is economic growth and what is the problem with it?

Kenta Tsuda worries about abandoning all future growth: “even at a decent standard of living, growth can enable more flourishing – a marginal year of health-span, a decision to have an additional child – and a more secure future for existing levels of flourishing: extra resources for R&D on the frontiers of biomedical research of basic science; more investment in state capacity and the processes of need-fulfilment” (p.113). These are all great things, but I am not sure additional economic growth is the best way to get them.

To understand why this is so, we must first grasp what economic growth really is. Too often, the term “growth” is conflated with an increase in wealth in the broadest sense of the term – more of the stuff that makes life better. But in reality, economic growth is a narrower concept only describing an increase in Gross Domestic Product (GDP). GDP is not a measure of wealth in general; it is a very specific statistical indicator that estimates the aggregated value of commodity production. Marxists critical of degrowth like Michael Löwy, David Schwartzman, and John Molyneux argue that, one should grow “productive forces,” defined as our general ability to collectively satisfy needs through the production of goods and services. But this is not what so-called growth policies and growth targets are about. They are about increasing GDP, which is only indirectly (and sometime inversely) related to need satisfaction.

Kenta Tsuda acknowledges the limitations of GDP (pp. 113-114) without realising its deep implications. What we measure as economic growth is the expansion of only certain forms of provisioning activities. This reminds me of Gibson-Graham’s iceberg figure where commodity production is the tip of the iceberg, only a small part compared to an array of other activities like self-provisioning, non-market production, and care work.

For certain limited resources like labour time and natural resources, investing in commodity production means de-investing in non-commodity production. A classic example is a burn-out. Working more (measured as growth if one works for a wage) depletes time outside of work (not measured by growth), and translates into time scarcity, stress, and sometimes sickness. GDP grows, but productive forces as a whole deteriorate. When it comes to these finite factors of production (time and attention, but also natural resources), the commodity growth imperative is monopolising resources that cannot be used elsewhere, for example in decommodified sectors of the economy.

Imagine the number of hours dedicated to marketing today. In 2019, the global marketing industry was worth $1.7 trillion, which coincidentally, is exactly the same amount spent in R&D worldwide. There are less than 300,000 scientists in France but more than twice that number of people working in marketing. Relaxing our frantic pursuit of sell-for-money growth would “liberate” many hours currently being dedicated to sell stuff. If all people working in marketing were to suddenly become university scholars, GDP would take a serious dive, but I doubt that society would be worse-off.

Kenta Tsuda argues that “economic growth is a Kaldor-Hicks efficient transaction [economic jargon for win-win], in that it generates sufficient benefits for transactional winners to compensate transactional losers, thus potentially leaving no one worse off and some better off.” I am not sure about that. Some forms of economic growth certainly are. I am thinking of productivity gains generated through better organisation. But other parts are not. This is the part of economic growth that relies on the mobilisation of additional natural resources and labour time.

The problem is that neoclassical economists do not include nature and reproductive work as factors of production. So, what may look like growth can also be seen as a transfer of wealth from social or/and ecological capital to financial capital. Cutting a forest looks like value-added in GDP (and is therefore counted as growth), but only because there was no prior value given to the forest. The same situation pertains for a happy volunteer community worker becoming an unhappy food delivering courier – GDP is up, but is society as a whole better-off? Again, the crux of the issue here is about how we measure wealth, and more fundamentally, about how we collectively give different values to different things.

The importance of anti-consumerism

“Degrowthers tend to elide the colloquial meaning of consumption, as something like discretionary ‘retail therapy’, with the term’s economic definition: the final use of a resource as a good or service. The latter sense encompasses not only the ostensibly superfluous resource uses that degrowthers would reduce or ban, but also unambiguously essential ones: nutritious food, commodious shelter, healthcare and childcare” (p.128). The essence of Kenta Tsuda’s argument here is that degrowth is analytically poor if it cannot differentiate between essential and superfluous consumption.

This calls for clarification. Degrowth is not against consumption per se, and people who lack access to food, healthcare, childcare, and housing should obviously consume more of it. The problem has rather to do with a broader culture of consumerism. The trouble with consumerism is precisely what Kenta Tsuda talks about: it bundles the essential with the unneeded. In capitalism, consumption is good because it pushes GDP up, and this regardless of what is being consumed and of the consequences of that consumption on people and the planet.

The core belief underpinning consumerism is that money can buy happiness. A “consumer society” is one where that will to consume is a central determinant of social life. The individual emancipates, matures, and thrives through acts of consumption (one becomes an independent adult by having a car, becomes a serious musician by buying an expensive instrument, and so on). In the commodity-shaped existentialism of capitalism, what people are depends on what they have, and what they have can all too easily be summed up as digits on a bank account.

Putting consumption at the centre of social life quickly turns into a positional competition. Status competition is a zero-sum game because each individual strives to gain advantage, but since all are trying to do so, all remain in the same relative position. This is the “positional treadmill”: displaying status to others by buying stuff is a dynamic process where continuous efforts are required just to preserve one’s current position. If everyone wears a Rolex, then wearing a Rolex would no longer be a source of distinction. Producing more Rolex may boost GDP, but it will leave well-being unchanged.

But there is a way out of this mad consuming war of all against all. The degrowth credo is precisely to render consumption concrete in order to separate the essential from the superfluous. This is the logic of voluntary simplicity, a philosophy of living centred around values of frugality and happiness. The goal is to get rid of the pressure to buy stuff as to regain autonomy over the setting of one’s life purpose; one could say, to decouple well-being from market consumption. Voluntary simplicity is a concrete ethic of consumption that focuses on the need-satisfying power of goods and services, and not on the abstract fact of having and spending money.

After all, the main satisfiers of well-being are of a relational nature, such as love, friendship, and neighbourliness. You cannot buy these things. Unlike the current focus on positional consumption, relational consumption prioritises social use value, that is the direct satisfaction of certain needs through a social activity. We derive satisfaction, not from the goods themselves, but from the bonding that they enable with others. I want a book to discuss it with my colleagues, a flute to play music with my friends, a telescope to enter in communion with comets, and sturdy shoes to visit the pines and beetles of the forest. What I want is not stuff, it is to enter in “resonance” with the world around me. Hence one of the slogans of degrowth: moins de biens, plus de liens (less transactions, more relations).

A predictable objection to this account is that voluntary simplicity is not enough (Kenta Tsuda rehearses this classic protest pp. 114-115). Clearly, this is not only a matter of personal ethics since consumption is always collectively framed. The decision to consume less as an individual is one thing, but the organisation of a system of provision where everybody does so is another. This is why voluntary simplicity is only a small part of the degrowth literature, and why many other institutions are necessary to democratically draw the line between the essential and the superfluous.

Of needs and democracy

It is this issue we now turn to: How to draw the line between what is essential and what is not? This question sounds complicated, and yet, it is a question we are answering more often than we think. In fact, every time something is consumed, produced, organised, or regulated, a line is drawn.

Companies draw the line when they decide what to produce and how to produce it. Today, most of them do so to make a profit and so decisions are skewed towards that end. But it could be different. I am thinking of not-for-profit business models organised around a concrete mission. For example, Collective Interest Cooperative Companies (scic) in France only produce goods and services that contribute to the achievement of a mission of social utility. This mission is defined by a democratic board including different stakeholders like workers, customers, residents, volunteers, public authorities, funders, associations, and other businesses.

Consumers draw the line when they decide what to buy. Advertisement wants us to believe that every single product is essential, but people still manage to make the difference between food and selfie sticks. Limiting advertisement, planned obsolescence, among other drivers of consumerism will improve consumers’ autonomy in making that choice. The goal is to escape “the tyranny of externally manufactured neediness.” We are back at the idea of voluntary simplicity and its constant Socratisation of consumption: Does earning more money and having more possessions advance or impede the attainment of my life’s purpose? If not, then why bother.

Communities draw the lines when they decide to self-organise the provision of certain goods and services, prioritising the things they like to other activities they consider less essential. This can take the form of communal food gardens, childcare circles, object-sharing networks, or the more traditional concerts and sport games. These initiatives result from communal decisions concerning needs and means of satisfying them. A perfect example would be the municipal job guarantee currently being experimented in parts of France. In order to create meaningful, useful jobs, they identify unmet needs in the community, and then match them with the skills and aspirations of the job-seekers, all of that in the most democratic way possible.

Governments draw the line every time they regulate. Different categories of Value Added Taxes, for example, represent lines between essential and superfluous. In France, the reduced VAT rates apply to certain drugs, feminine hygiene products, books, renewable energy, and services for people with disabilities. A wheelchair is less taxed than a private jet, and this is not a random decision. There are taxes on luxury products like yachts and swimming pools and subsidies for essential goods like energy, museums, and public transportation. (I have chosen taxes as an example of a line-drawing policy, but many other non-economic instruments exist.)

The notion of needs is ambiguous and contextual. I am afraid it will always be so. Degrowth does not call for a grand, bureaucratic process of inventory to draw an absolute and definite line between the essential and superfluous (an arguably impossible task). Degrowth aims to democratise decision-making at all the levels where it occurs, which translates into a number of specific proposals, like limiting advertisement, opening-up the governance of companies, giving resources for communities to self-organise, and making public governance more participative.

The ecological case for degrowth

For Kenta Tsuda, “material throughput” is a placeholder term – “while material throughput may be a fruitful category for thought experiments, it is deeply flawed as a basis for effective environmental policymaking” (p.119). The term ecological economists actually use is biophysical throughput, to refer to all the natural resources that go through the economy and are disposed back in nature. This is a theoretical category, which can be divided into several more measurable indexes.

Ecological footprint looks at how fast we consume resources and generate waste compared to how fast nature can absorb our waste and generate new resources. Material footprint estimates the global quantity of materials like biomass, fossil fuels, and minerals consumed by a country. Water footprint measures the amount of water used to produce goods and services. Carbon footprint sums up the amount of carbon being emitted by an activity. There are many others, all of them useful for evidence-based, environmental policymaking.

Kenta Tsuda appears surprisingly unaware of the range of ecological indicators used in the degrowth literature: “the ecological rationale for degrowth boils down to necessary climate action” (pp.123-127). It does not. A “sustainable” economy in any meaningful understanding of the term must consider all the complex interactions it has with ecosystems, and not only carbon. Economies should be carbon neutral, but also remain within the regenerative capacities of all renewable resources, within the acceptable stocks of non-renewable resources, and within the assimilative capacities of ecosystems.

What makes degrowth complicated is that it aims to reduce several patterns of resource use at once. It is a response to the “Great Acceleration”: rising curves in primary energy use, ocean acidification, fertilizer consumption, marine fish capture, water use, and many other indicators of environmental stress. One of the key assumptions underpinning the degrowth argument is that further economic growth in rich countries will exacerbate these trends. There is room for debate about how much that is so, and whether these countries can decouple a smaller or larger part of their GDP growth from environmental pressures in the future. But the literature on the topic is clear: today, economic growth is still a driver of environmental disruption.

## Degrowth ADV---AT: Growth Good

### AT: Hegemony Turn---2AC

#### Voluntary downshifting is less disruptive to hegemony than involuntary collapse due to unsustainability.

Gaya Herrington & Richard Wouters 23, Gaya Herrington is a Dutch econometrician, sustainability researcher and women’s rights activist, author of Update to Limits to Growth and Five Insights for Avoiding Global Collapse; Richard Wouters is a member of staff at Wetenschappelijk GroenLinks, the think tank of the Dutch Green party, GroenLinks, “Geopolitics Beyond Growth,” Imagining Europe Beyond Growth, May 2023, European Environmental Bureau

The degrowth movement is rapidly gaining popularity in Europe. It advocates renouncing economic growth. But without growth, can we still stand up for our values and interests on the world stage? Richard Wouters asked sustainability expert Gaya Herrington about the geopolitical implications of an economic model without growth.

Richard Wouters: You made headlines with a study that confirmed the message of the Club of Rome from 1972: we are nearing the limits to growth. What did your research entail? Gaya Herrington: I checked the scenarios the authors of the report The Limits to Growth created at the time with their world model against recent data. That confirmed the 1972 scenarios. I have seen many models in my lifetime. I don’t know of one that has proven so accurate decades later. The data are closest to the business-asusual scenario, in which we continue to pursue economic growth as the ultimate goal. Pollution and greenhouse gas emissions will cause ecosystem collapse in about 20 years from now. In this scenario of continued climate change, the global welfare level falls sharply.

We are furthest away from the stabilised world scenario, in which humanity stops pursuing economic growth, reduces its material footprint, and commits to improving healthcare, education and other public services, as well as clean technology. In that scenario, ecological breakdown is staved off. Right now, we are not moving in that direction, but the distance between this scenario and the data from reality can still be bridged. We can still avert collapse but it will be a bumpy ride because we have lingered too long for a gradual transition. What we do in the next 10 to 20 years will determine our level of prosperity for the rest of the century.

Proponents of green growth argue that technological innovations make it possible to reduce greenhouse gas emissions and other forms of pollution while growing gross domestic product.

You don’t see that at all in the empirical evidence. It’s just wishful thinking. You hardly see relative decoupling, where our ecological footprint grows less quickly than GDP. And you certainly don’t see absolute decoupling, where that footprint shrinks while GDP grows. It is true that some countries are succeeding – slowly – in reducing greenhouse gas emissions while GDP grows, but other forms of pollution continue to increase while biodiversity declines. This is all the worse because we have been exceeding the boundaries of our planet’s carrying capacity since the 1970s.

You do not believe in green growth, but at the same time you keep your distance from the degrowth movement. Why?

I am much closer to the degrowth camp than to that of green growth. But I want to emphasise that green growth is definitely useful for poor countries. There, growth still contributes directly to people’s wellbeing. In Europe, this has long ceased to be the case – in fact, the drive for growth makes us “ What we do in the next 10 to 20 years will determine our level of prosperity for the rest of the century. unhappier because it fuels pollution and inequality. The policy agenda of the degrowth movement is very suitable for Europe.

My objection mainly concerns the term “degrowth”. It reminds people of a recession, with unemployment and social unrest. We must take this fear seriously. I agree with the degrowthers that deliberate shrinkage of the economy sets in motion a more positive dynamic than not growing in a growth-oriented economy. But I fear that the term scares people so much that they no longer listen to that explanation. Therefore, I would rather let go of growth than actively degrow. An economy that focuses on human wellbeing and the protection of nature simply creates a more beautiful world. The best term for this is wellbeing economy. It provides an enticing perspective.

The countries of the EU bear the greatest historical responsibility for the climate crisis and the depletion of natural resources. They are also among the most affluent parts of the world. Is it likely that the EU will be the first to let go of economic growth?

I think so. European politicians could very well be the first to realise that this is better for their citizens, that it prepares them for a new future. My research suggests that at some point in the next 20 years, growth will stop anyway. The choice then is: do we consciously let go of growth or is the end of growth being forced upon us because we collide with planetary boundaries? I hope politicians will understand that the second scenario causes much more instability.

I would like to draw politicians’ attention to the phenomenon of downshifting. That’s a term from neurology. It indicates that when people are under stress from issues such as imminent violence and resource scarcity, instincts take over. The systems thinking needed to implement deep reforms in the EU still has a chance now; it’s less likely we’ll be cool-headed enough for it a decade from now.

#### Degrowth is compatible with military spending for deterrence

Gaya Herrington & Richard Wouters 23, Gaya Herrington is a Dutch econometrician, sustainability researcher and women’s rights activist, author of Update to Limits to Growth and Five Insights for Avoiding Global Collapse; Richard Wouters is a member of staff at Wetenschappelijk GroenLinks, the think tank of the Dutch Green party, GroenLinks, “Geopolitics Beyond Growth,” Imagining Europe Beyond Growth, May 2023, European Environmental Bureau

Here comes the geopolitical question: can a society based on partnership defend itself against a society that strives for domination?

In its pure form, such a partnership society cannot do that. It is not inclined to invest in defence. One of “ Equality and gender inclusion are core elements of a sustainable wellbeing economy. the most famous Dutch lines of poetry, by Lucebert, applies here: “All things of value are defenceless.” In the real world, countries with a partnership model will have to move a little towards the domination model. That is a shame, because investments in the armed forces are at the expense of natural resources, but unfortunately it is necessary. Still, it is important not to lose yourself in a warrior mentality. You must have a strong army, not to dominate, but to engage.

Domination versus partnership, which countries should we think of?

Domination and partnership are the two ends of a sliding scale. No country has only one or the other model. Russia is an example of a country closer to the domination model. In Bhutan, with its gross national happiness policy, in Costa Rica, an eco-economy without an army, and in New Zealand, which assigns rights to nature, you clearly recognise the partnership model. The same applies to the EU, although it varies per country.

Like degrowthers, you advocate high-quality public services as part of a wellbeing economy. These include social security, education and health care. In the EU, should we add defence and diplomacy to this list, now that the Russian attack on Ukraine has ended a long period of peace on our continent?

Yes, I think so. You and I will not live to see the day when military power is no longer necessary, I’m afraid. We should also put diplomacy on the list of essential public services, although it is of course more credible if a government carries a big stick. It’s important to know when to fight and when not to. That is how I see the role of the EU: it should be a proud frontrunner of sustainability, always with the intention of working together, but able and willing to defend itself if necessary.

In a society without economic growth that has to maintain a strong armed force, there is even less room for private consumption.

Indeed. In addition, we need a buffer in case our ecological footprint increases due to calamities such as a health crises or military conflict. That is why our economy should become completely climate neutral. Nature’s capacity to absorb carbon dioxide from the atmosphere then forms the buffer for emergencies.

#### Growth-based hegemony is unsustainable. Countries that degrow preemptively can monopolize the future determinants of national power.

Gaya Herrington & Richard Wouters 23, Gaya Herrington is a Dutch econometrician, sustainability researcher and women’s rights activist, author of Update to Limits to Growth and Five Insights for Avoiding Global Collapse; Richard Wouters is a member of staff at Wetenschappelijk GroenLinks, the think tank of the Dutch Green party, GroenLinks, “Geopolitics Beyond Growth,” Imagining Europe Beyond Growth, May 2023, European Environmental Bureau

In geopolitics, GDP is an important indicator of power. Will an EU without economic growth lose power?

That might have been the case in the past. But now we have to face the fact that growth will come to an end anyway, as said within 20 years. If the EU has transformed itself into a wellbeing economy by then, it will be stronger in the world. Countries that continue to chase growth while the ecosystem breaks down are heading for disruption.

Can declining economic power be compensated by other forms of power?

Social capital is a huge source of power. We see that today in Ukraine. The wartime resilience of Ukrainians has amazed everyone. Russian men often have to be forced into fighting because there is no big story they believe in. Ukrainians are in solidarity with each other, connected by a strong narrative about what they stand for and what they are fighting for. Many are willing to sacrifice their lives for it. A strong social fabric makes all the difference in times of crisis. And I think that a wellbeing economy that meets everyone’s basic needs, a society where people feel that there is fair sharing and equal treatment, will reap social cohesion.

In contrast, societies in which coercion and violence predominate are often weaker than they appear. I sometimes compare the domination model with toxic masculinity: it looks very strong but it is as fragile as anything. The urge to expand causes shocks, of an ecological or other nature, and the resilience to absorb these shocks is lacking. A society based on domination will eventually collapse.

#### Military preponderance is a disaster and fails

Dr. Andrew Bacevich 20, Professor of History and International Relations at Boston University, Ph.D. in American Diplomatic History from Princeton University, and Graduate of the U.S. Military Academy, “The Endless Fantasy of American Power”, Foreign Affairs, 9/18/2020, https://www.foreignaffairs.com/articles/united-states/2020-09-18/endless-fantasy-american-power

Unfortunately, this frenetic pace of military activity has seldom produced positive outcomes. As measured against their stated aims, the “long wars” in Afghanistan and Iraq have clearly failed, as have the lesser campaigns intended to impart some approximation of peace and stability to Libya, Somalia, and Syria. An equally unfavorable judgment applies to the nebulous enterprise once grandly referred to as the “global war on terrorism,” which continues with no end in sight.

And yet there seems to be little curiosity in U.S. politics today about why recent military exertions, undertaken at great cost in blood and treasure, have yielded so little in the way of durable success. It is widely conceded that “mistakes were made”—preeminent among them the Iraq war initiated in 2003. Yet within establishment circles, the larger implications of such catastrophic missteps remain unexplored. Indeed, the country’s interventionist foreign policy is largely taken for granted and the public pays scant attention. The police killing of Black people provokes outrage—and rightly so. Unsuccessful wars induce only shrugs.

THE CHIMERA OF “AMERICAN LEADERSHIP”

With something approaching unanimity, Americans “support the troops.” Yet they refrain from inquiring too deeply into what putting the troops in harm’s way has achieved in recent decades. Deference to the military has become a rote piety of American life. In accepting the Democratic Party’s nomination for the presidency, for example, Joe Biden closed his remarks with an appeal to the Divine on behalf of the nation’s soldiers: “And may God protect our troops.” Yet nowhere in his 24-minute address did Biden make any reference to what U.S. troops were currently doing or why in particular they needed God’s protection. Nor did he offer any thoughts on how a Biden administration might do things differently.

Americans don’t particularly want to hear about war or the possibility of war in the present season of overlapping and mutually reinforcing crises. And Biden obliged them in the most important speech of his career. The famously garrulous politician mentioned recent U.S. wars only in passing, briefly referring to his late son, who served in Iraq, and excoriating U.S. President Donald Trump for not responding more aggressively to revelations that Russia put bounties on U.S. soldiers in Afghanistan.

This aversion to taking stock of recent U.S. wars is by no means unique to Biden or confined to the Democratic Party. It is a bipartisan tendency. It also inhibits a long overdue reexamination of basic national security policy.

Between the fall of the Berlin Wall and the 2016 presidential election, leaders of both political parties collaborated in trying to demonstrate the efficacy and necessity of what they habitually referred to as “American global leadership.” Embedded in that seemingly benign phrase was a grand strategy of militarized primacy. Unfortunately, the results achieved by this assertion of global leadership proved to be anything but benign, as turmoil in Afghanistan and Iraq attest. Although the defense industry and its allies have profited from American wars, the American people have done less well. Protracted wars are not making Americans freer or more prosperous. They have instead saddled the nation with enormous debt and diverted attention and resources from neglected domestic priorities.

In 2020, further occasions for bristling, militarized U.S. leadership beckon. China offers the most obvious example for hawks, with demands that the United States confront the People’s Republic growing more insistent by the day. Many in Washington appear to welcome the prospect of a Sino-American cold war. Other prospective venues for demonstrating assertive U.S. leadership include in operations against Iran, Russia, and even poor benighted Venezuela, with prominent figures in the Beltway eager to have a go at regime change in Caracas.

To cling to this paradigm of U.S. global leadership is to perpetuate the assumptions and habits defining post–Cold War U.S. national security policy—and above all the emphasis on amassing and employing military might. The United States grants itself prerogatives allowed to no other country to remain, in its own estimation, history’s “indispensable nation.” To judge by the results achieved in Afghanistan, Iraq, and other recent theaters of war, this imperative will only continue to wreak havoc in the name of freedom, democracy, and humane values.

#### No great power challengers

Cui Lei 20, PhD and MA in International Politics, associate research fellow with the China Institute of International Studies, "Despite heated talk, risk of a US-China hot war is small", South China Morning Post, 7-24-2020, https://www.scmp.com/comment/opinion/article/3094121/why-risk-us-china-hot-war-small-despite-heated-talk

Many observers are pessimistic about deteriorating US-China relations and believe the two countries are heading towards a cold war. Even worse, some argue that the situation might be more dangerous than the US-Soviet Union Cold War, and that a hot war might break out between the two. This argument is unconvincing.

First of all, deterrents to a flare-up are much stronger in US-China relations than in US-Soviet relations. Although economic and people-to-people ties between China and the US are declining, they are still close compared to US-Soviet ties. It is hard to decouple two closely intertwined economies and societies.

Take two examples. China is expected to become the world's largest consumer market, a temptation hard to resist for exporters, including those from the US. And in education, more than 300,000 Chinese students study in the US, bringing in huge revenues for the US education industry.

Many universities go to great lengths to woo international students. Recently Harvard and the Massachusetts Institute of Technology even sued the government over its new visa restrictions, now aborted, on international students.

Second, even if there is decoupling, the pain would not be too great and can be kept out of the national security sphere if properly handled. In fact, for national security reasons, a modest degree of isolation will make both sides more secure and comfortable. For instance, if China’s information technology equipment cannot capture Western markets, the US will be more relaxed. If China cannot get advanced technologies from the US and its technological progress slows down, the US will be less anxious.

In the same vein, China feels assured knowing that if the Trump administration does impose a travel ban on Communist Party members, it would be abandoning one of the tools available to the US to promote “peaceful evolution” in China.

Economic decoupling is undeniably more painful for China than for the US. But unlike Japan during WWII, which was hit hard by the US oil embargo because of its lack of natural resources, China has no such problems. Given its large domestic market, losing the US as a major customer is not a disaster for China, and can be compensated through more dynamic economic activities at home. China can also make up for being freezed out of technological exchanges by turning to indigenous innovation.

As for the US, it can import goods from other developing countries, albeit less cheaply. The relative loss is acceptable when weighed against the heightened perception of economic independence and security.

Third, the ideological confrontation between China and the US is less intense than that during the Cold War. Unlike the obsession with ideology in those days, the line between capitalism and socialism is blurred today. The market economy has become universally recognised as the best way to promote economic growth and, politically, many countries have embraced democracy. Even North Korea calls itself the Democratic People’s Republic of Korea.

Although ideological hawks in the US still long for the day when the beacon of freedom will light up the world, after many years of fighting bloody wars overseas, most American people are not interested in promoting democracy abroad. Meanwhile, China just wants to preserve its political system and has no interest in exporting it to other countries, as the Soviet Union did.

Thus, ideological antagonism in China-US relations can easily be eased by calculations of realistic interests, which create conditions for compromise and cooperation.

Fourth, both China and the US have many options other than war to achieve their policy goals. While they have no allies to serve as a buffer, given the nature of the potential conflict in the South China Sea or Taiwan Strait, both countries are adept at operating in grey zones and fighting psychological, public opinion or diplomatic warfare below the threshold of war. The forced closure of the Chinese consulate in Houston by the US government is just the latest act of brinkmanship.

In addition, given China’s huge economic and financial interests in the US, the latter can wield the stick of sanctions when use of force is highly risky or not worth it. When both sides have many tools and options, why would they rush to war to achieve their goals?

Last but not least, the imbalance of power will act as a deterrent. Some say the US and Soviet Union did not fight a hot war because they were evenly matched. It was not the case, actually. At the beginning of the Cold War, the Soviet Union was at a relative military disadvantage.

Moreover, a country needs the will to fight before going to war, even if it is stronger militarily than its adversary. Having fought years of meaningless wars, the US is weary of war.

China, too, abhors war. Having a clear understanding of US strength, especially when its own economy is slowing down and it is facing various domestic challenges, China would not wish to recklessly start a war with the US.

In summary, the possibility of a hot war between China and the US is very small. The greatest danger for China is not a cold or hot confrontation with the US, but policymakers’ interpretation of the momentary hostility towards Beijing of a portion of the American population and the larger world. An erroneous interpretation could end China’s march to further opening up, and see it turn instead towards self-isolation.

#### Retrenchment is inevitable and will be gradual now, but recommitting makes it violent and forced.

Charles A. Kupchan 20, professor of international affairs at Georgetown University and senior fellow at the Council on Foreign Relations, "America’s Pullback Must Continue No Matter Who Is President", Foreign Policy, 10-21-2020, https://foreignpolicy.com/2020/10/21/election-2020-smart-retrenchment/

As the Trump era potentially comes to an end, many foreign-policy voices in the United States and abroad relish the prospect of the country’s roaring return to the global stage. But attempting a full-on comeback would be a mistake. If anything, the strategic pullback that President Donald Trump has initiated needs to continue—albeit in a more coherent and judicious manner.

Much of the debate surrounding the next administration’s foreign policy has focused on boldly reasserting U.S. leadership in the world. And it’s true: Global interdependence and upheaval do require steady U.S. leadership and engagement. What’s been largely missing from this debate, however, are the challenges facing the next president when it comes to right-sizing U.S. engagement abroad—especially military involvement—and bringing the nation’s strategic commitments back into line with it means and purposes.

The American electorate has turned sharply inward in response to military overreach in the Middle East, the economic dislocations brought about by innovation and globalization, and the national calamity caused by COVID-19. The nation’s next president would be wise to take note—and craft a brand of global statecraft that is effective but also politically sustainable. Otherwise, the strategic pullback that needs to take place will occur by default rather than by design, risking that U.S. overreach could turn into even more dangerous underreach. Indeed, that’s what’s been happening during Trump’s presidency. He seems to have understood the need to retrench. But his troop withdrawals from Afghanistan, Iraq, Syria, and Germany have been haphazard, making a hash of the effort. Retrenchment cannot be done by tweet, in unpredictable fits and starts, and couched in an abrasive “America first” unilateralism that has alienated allies and set the world on edge.

Democratic candidate Joe Biden is far better suited to restore an equilibrium between the nation’s foreign policy and its political will. Throughout his career, he has been a pragmatic and prudent internationalist; looking forward, pragmatism and prudence will require a more selective and discriminating internationalism, not restoration of the status quo ante. Three-quarters of the American public want U.S. troops to leave Afghanistan and Iraq—it is time to downsize the U.S. footprint in the Middle East. U.S. foreign policy has become over-militarized—the next administration should reallocate priorities and resources, putting more emphasis on diplomacy, cybersecurity, global public health, and climate change. Washington should also return to being a team player if it is to lighten its load; retrenchment and multilateral engagement go hand in hand. Meeting the threat posed by China, managing international trade and finance, preventing nuclear proliferation, addressing pandemics—these and other urgent challenges all require broad international cooperation. And as the United States pulls back from its role as global policeman, it will want like-minded partners to help fill the gap. These partnerships become stronger through diplomacy and teamwork.

The top priorities of the next president will be at home: taming the pandemic, repairing the economy, and reviving democratic institutions and norms. Only if the country’s democratic lights come back on can it effectively deal with the rest of the world. In the meantime, the next administration needs to continue Trump’s effort to downsize the nation’s foreign entanglements—but in a smart and measured way. The United States needs to step back without stepping away. “Build back better” applies abroad just as much as it does at home.

### AT: Hegemony Turn---I/L Turn

#### Degrowth enables mineral independence---this is required for geopolitical resilience.

Jamie Kendrick & Olivia Lazard 23, Kendrick is editor-in-chief of the Green European Journal, a political magazine of green ideas and analysis; Lazard is a fellow at Carnegie Europe and researches the geopolitics of climate-disrupted futures and ecological breakdown, “Olivia Lazard: 'Degrowth needs a strong geopolitical and geo-economic proposition',” EU Observer, 5/12/23, https://euobserver.com/growth-week/157026

You work on the link between the green transition, conflict and peace. What does the link between growth, extraction and conflict mean for the EU?

Like any energy-intensive economy, the EU relies on exponential extraction. By the nature of its single market and the fact that the EU is largely a service-oriented economy, it outsources the costs of extraction to other economies that use trade and commercial exchanges to climb up the economic growth ladder. In some contexts, extraction is intimately related to violence, elite predation, corruption and illicit financial flows.

The EU is not blind to the problems of extraction. It has developed tools such as supply chain oversight mechanisms. It is currently working on one for critical minerals for example. But regulations can easily be bypassed where there is high demand. Energy-intensive economies tend to ignore those extractive economies, especially highly concentrated ones such as mining, produce political economies that either instrumentalise violence or marginally try to mitigate it to avoid the cost.

Regulatory tools can only superficially mitigate these violent political economies. What is needed instead is either to address them upstream before supply chains get created or organise systemic investments to tackle economic, ecological, governance, social, and financial fragility that truly transform violent political economies around extraction.

Our economic and social systems were built on growth and extraction and the green transition is so far following a similar logic. Is there an alternative relationship with natural systems?

If you look at human history, there are other ways of functioning. Indigenous communities have been shouting this fact at "modernised" peoples and societies for centuries. We know, for example, that the Amazon Basin is not just the result of natural processes and ecological sequencing, it is the result of human stewardship and curating positive interactions between human societies and natural living systems. The relationship between humans and natural living systems remains understood in certain parts of the world as reciprocal. This knowledge is what we need to reacquaint ourselves with in the long term. But it is very difficult to take indigenous civilisations as the starting point compared to how we live in Europe or the US today. That is a fact that we can't and shouldn't ignore. What's at stake for European societies is to land extremely complex and fine socio-economic equilibriums into a space that is mutually reinforcing with complex living systems.

Social welfare systems are key parts of the socio-political DNA of European nations and they rely on employment to generate a tax base. In Europe, that employment depends on macro-economic structures that rely on extraction from elsewhere and commercial exchanges that maintain fine balances with other countries. It's the principle of globalisation: no country is an island, we all depend on one another, and we all have stakes meshed into interdependencies that define national equilibriums and models of redistribution.

As we seek to transform our relationship with complex living systems by integrating so-called externalities into our economic behaviour, and if we change economic interdependencies, including through demand-reduction or degrowth policies, we have to understand what trade-offs we create and what instability we may generate. For Europeans, a key question is how to re-engage with complex living systems and work towards global climate and economic justice, whilst landing in an economic system that does not break social safety nets in Europe.

Fundamentally, that's what the degrowth conversation is having difficulty with. If you look at things from a national perspective, then you can have reflections about how to take away certain sectors, move the labour force to another sector, potentially re-skill them and so on. But once you put a national economy in the context of its international ties, the conversation becomes a lot more difficult.

A really good example is the palm oil issue. Malaysia and Indonesia reacted against the EU banning palm oil because it threatens the social equilibriums around palm oil, not because they are against climate action. When the deforestation law was introduced in the EU, it didn't into account the effects on supply countries, generating instability in partner countries and breaching trust in international relations. Without proper attention to our partners, we will undermine some of the fundamental fabrics that the degrowth movement aims to reconstruct and strengthen, especially in the face of climate disruptions.

If degrowth is too much of a rupture but at the same time we know that the logic of growth is destroying vital natural systems, what is the way forward for our economies?

The imaginary of how to regear economies from being extractive to regenerative — ie. not extracting more than the regeneration rates of nature — poses two questions.

First, do we still have the time to regenerate knowing that the climate crisis is so far advanced? Natural resources and ecosystems are already on the move, we're seeing the change in the migration patterns of birds. State- and nationhood are based on established borders, established natural resource distribution, and imagined identities linked to borders. If they begin to move, it's going to create a lot of problems. Can we catch a last window of opportunity to sustain certain natural resource distribution patterns the way that they are today through regeneration? Or are we moving into something entirely different and therefore we don't exactly know how to regenerate?

Second, the fundamental question is not whether degrowth is a desirable outcome in and of itself but whether is degrowth effective and impactful within a regenerative economy and environment at the local, national, regional and international levels. Does degrowth serve the purpose of reducing unnecessary material use and shifting economies towards more localised, circular and bioregional economies that help to feed soils and plant water, meaning regenerate water retention landscapes? Can degrowth regenerate social fabrics and combat other social problems such as epidemics around loneliness, depression and mental health?

All of our political and social systems need to be oriented towards regeneration and the question for degrowth is whether it is part of that.

Has the war in Ukraine revealed a link between Europe's geopolitical stance and degrowth policies?

The fallout of the war has led to more reflection on resource efficiency. I wouldn't call it degrowth. Degrowth is more of a political proposition around how to arbitrate between the ethical, economic and social benefits of certain key sectors. This reflection needs to be about more than fighting unemployment crises or doing away with detrimental consumerist behaviours.

True, but the kinds of policies called for by degrowth advocates have entered the window of political acceptability.

That is also true. I'm a French national and it was interesting to observe the presidential campaign last year. I would have expected degrowth to become a keyword in the 2027 presidential campaign but it already happened in 2022. So it is happening. The climate-disrupted futures are calling in a new political spectrum.

The war in Ukraine has sent a reality check and shock to our systems, particularly in Europe. The different avenues to talk about the reality of degrowth because of the war in Ukraine were sparked by the key connections between fossils as a commodity that creates a chronic crisis and war and Europe's strategic autonomy.

There is an argument to say that the more strategic autonomy Europe gains by investing in open and decentralised energy systems, the better off we'll be. But that is true only if you take decarbonisation as an endpoint. Getting there is riddled with obstacles that are likely to make the conversation about degrowth very hard in the next decade.

How so?

I remember this poster last year by the Greens that had the Ukrainian flag in the background and some workers who were putting up a wind turbine saying we'll have more peace if we invest in more renewables. I understand it from a communication perspective but its message is questionable when you consider that the shift away from fossil dependency is a move towards mineral dependencies. It's another era of extraction, just with different base materials. The EU does not have enough minerals in its territory, despite the so-called discovery in Sweden, to fulfil its own clean tech needs. These minerals will create dependencies and extraction may drive economic relations that will shape systems rivalry. This is not an invented threat. It is a real one. We can only degrow by making sure we take care of the security dilemma at the centre of our international system right now.

The EU needs to look at the dependencies we want to develop 20 years from now. China and Russia are ahead of the game in terms of supply chain autonomy and sovereignty and are using their economic advantage to shift governance systems in the Global South. The rise of authoritarian regimes or at least non-transparent, not accountable regimes is in step with the energy transition. This is something which I think we need to debate when it comes to degrowth. Degrowth has a strong political-ecological proposition. It needs to have a strong geopolitical and geo-economic one too.

### AT: Hegemony Turn---Defense

#### Alternative explanations for stability outweigh.

Christopher J. Fettweis 20, Associate Professor of Political Science at Tulane University, "Delusions of Danger: Geopolitical Fear and Indispensability in U.S. Foreign Policy", A Dangerous World? Threat Perception and U.S. National Security, 6-3-2020, https://www.cato.org/publications/publications/delusions-danger-geopolitical-fear-indispensability-us-foreign-policy

Many of the factors that contribute to geopolitical fear — Manichaeism, religiosity, various vested interests, and neoconservatism — also help explain American exceptionalism and the indispensability fallacy. And unipolarity makes hegemonic delusions possible. With the great power of the United States comes a sense of great responsibility: to serve and protect humanity, to drive history in positive directions. More than any other single factor, the people of the United States tend to believe that they are indispensable because they are powerful, and power tends to blind states to their limitations. “Wealth shapes our international behavior and our image,” observed Derek Leebaert. “It brings with it the freedom to make wide‐​ranging choices well beyond common sense.“49 It is quite likely that the world does not need the United States to enforce peace. In fact, if virtually any of the overlapping and mutually reinforcing explanations for the current stability are correct, the trends in international security may well prove difficult to reverse. None of the contributing factors that are commonly suggested (economic development, complex interdependence, nuclear weapons, international institutions, democracy, shifting global norms on war) seem poised to disappear any time soon.50 The world will probably continue its peaceful ways for the near future, at the very least, no matter what the United States chooses to do or not do. As Robert Jervis concluded while pondering the likely effects of U.S. restraint on decisions made in foreign capitals, “It is very unlikely that pulling off the American security blanket would lead to thoughts of war.“51 The United States will remain fundamentally safe no matter what it does — in other words, despite widespread beliefs in its inherent indispensability to the contrary.

#### U.S. primacy is ineffective and permanently tarnished.

Patrick Porter 19, Professor of International Security and Strategy at the University of Birmingham. He is also Senior Associate Fellow at the Royal United Services Institute, London and a Fellow of the Quincy Institute for Responsible Statecraft, “Advice for a Dark Age: Managing Great Power Competition”, The Washington Quarterly, 42:1, 7-25, https://doi.org/10.1080/0163660X.2019.1590079

American grand strategy since 1945 has been one of “primacy,” to secure itself by acquiring unrivalled dominance and denying key regions to hostile powers. Against hopes to the contrary, Washington’s consolidation of its primacy since the collapse of the Soviet Union has not created an international order content to submit to its will. Despite—or because of—expanded alliances in Europe and Asia, a globe-girdling military presence, wars of regime change and occupation, and the spread of capitalism on Washington’s terms, U.S. rivals have amassed greater capability and increased appetite for risk-taking. Additionally, U.S. allies are hedging—for instance through their participation in the Asia Infrastructure Investment Bank (AIIB) or their opposition to Washington’s abrogation of the JCPOA nuclear agreement and its new sanctions against Iran, all over the United States’urging.2Emerging powers, such as India, also hedge, sharing intelligence with Washington while buying S-400 missiles from Russia and muting criticism of Beijing.3And American allies in Asia are investing increasingly heavily in defense. Though this has come partly through U.S. urging, it could tip potentially into an arms race.

The United States is not willingly accepting these developments that under-mine its primacy. It neither makes major concessions nor willingly shares power. Despite President Donald Trump’s campaign rhetoric, the United States on his watch pursues a more illiberal version of dominance, enlarging its footprint in Europe, the Middle East and Asia.4Trump has drawn down a small garrison in Syria, but increased the overall U.S. presence in the Gulf, and his administration is attempting to isolate and contain Iran. Trump’s domestic opponents, too, show no signs of renouncing the pursuit of primacy abroad. Apart from opposing his trade wars, they denounce the White House for being too accommodating to adversaries and not supportive enough of allies. With escalating rivalries under way against two Eurasian heavyweights, Russia and China, and potential confrontations with two designated proliferation “rogues” in Iran, North Korea and possibly Venezuela, the United States is in danger of being locked into combat with five adversaries simultaneously.

#### No leadership impact---empirics.

Christopher J. Fettweis 20, Associate Professor of Political Science at Tulane University, "Delusions of Danger: Geopolitical Fear and Indispensability in U.S. Foreign Policy", A Dangerous World? Threat Perception and U.S. National Security, 6-3-2020, https://www.cato.org/publications/publications/delusions-danger-geopolitical-fear-indispensability-us-foreign-policy

Like many believers, proponents of hegemonic stability theory base their view on faith alone.41 There is precious little evidence to suggest that the United States is responsible for the pacific trends that have swept across the system. In fact, the world remained equally peaceful, relatively speaking, while the United States cut its forces throughout the 1990s, as well as while it doubled its military spending in the first decade of the new century.42 Complex statistical methods should not be needed to demonstrate that levels of U.S. military spending have been essentially unrelated to global stability.

Hegemonic stability theory’s flaws go way beyond the absence of simple correlations to support them, however. The theory’s supporters have never been able to explain adequately how precisely 5 percent of the world’s population could force peace on the other 95 percent, unless, of course, the rest of the world was simply not intent on fighting. Most states are quite free to go to war without U.S. involvement but choose not to. The United States can be counted on, especially after Iraq, to steer well clear of most civil wars and ethnic conflicts. It took years, hundreds of thousands of casualties, and the use of chemical weapons to spur even limited interest in the events in Syria, for example; surely internal violence in, say, most of Africa would be unlikely to attract serious attention of the world’s policeman, much less intervention. The continent is, nevertheless, more peaceful today than at any other time in its history, something for which U.S. hegemony cannot take credit.43 Stability exists today in many such places to which U.S. hegemony simply does not extend.

### AT: Hegemony Turn---Unsustainable

#### Unsustainable

Alexander Cooley & Daniel H. Nexon 20, Colley is Claire Tow Professor of Political Science at Barnard College and Director of Columbia University’s Harriman Institute; Nexon is Associate Professor in the Department of Government and at the Edmund A. Walsh School of Foreign Service at Georgetown University, “How Hegemony Ends”, Foreign Affairs, 6/9/20, https://www.foreignaffairs.com/articles/united-states/2020-06-09/how-hegemony-ends

CONSERVING THE U.S. SYSTEM

Great-power contestation, the end of the West’s monopoly on patronage, and the emergence of movements that oppose the liberal international system have all altered the global order over which Washington has presided since the end of the Cold War. In many respects, the COVID-19 pandemic seems to be further accelerating the erosion of U.S. hegemony. China has increased its influence in the World Health Organization and other global institutions in the wake of the Trump administration’s attempts to defund and scapegoat the public health body. Beijing and Moscow are portraying themselves as providers of emergency goods and medical supplies, including to European countries such as Italy, Serbia, and Spain, and even to the United States. Illiberal governments worldwide are using the pandemic as cover for restricting media freedom and cracking down on political opposition and civil society. Although the United States still enjoys military supremacy, that dimension of U.S. dominance is especially ill suited to deal with this global crisis and its ripple effects.

Even if the core of the U.S. hegemonic system—which consists mostly of long-standing Asian and European allies and rests on norms and institutions developed during the Cold War—remains robust, and even if, as many champions of the liberal order suggest will happen, the United States and the European Union can leverage their combined economic and military might to their advantage, the fact is that Washington will have to get used to an increasingly contested and complex international order. There is no easy fix for this. No amount of military spending can reverse the processes driving the unraveling of U.S. hegemony. Even if Joe Biden, the presumptive Democratic nominee, knocks out Trump in the presidential election later this year, or if the Republican Party repudiates Trumpism, the disintegration will continue.

The key questions now concern how far the unraveling will spread. Will core allies decouple from the U.S. hegemonic system? How long, and to what extent, can the United States maintain financial and monetary dominance? The most favorable outcome will require a clear repudiation of Trumpism in the United States and a commitment to rebuild liberal democratic institutions in the core. At both the domestic and the international level, such efforts will necessitate alliances among center-right, center-left, and progressive political parties and networks.

What U.S. policymakers can do is plan for the world after global hegemony. If they help preserve the core of the American system, U.S. officials can ensure that the United States leads the strongest military and economic coalition in a world of multiple centers of power, rather than finding itself on the losing side of most contests over the shape of the new international order. To this end, the United States should reinvigorate the beleaguered and understaffed State Department, rebuilding and more effectively using its diplomatic resources. Smart statecraft will allow a great power to navigate a world defined by competing interests and shifting alliances.

The United States lacks both the will and the resources to consistently outbid China and other emerging powers for the allegiance of governments. It will be impossible to secure the commitment of some countries to U.S. visions of international order. Many of those governments have come to view the U.S.-led order as a threat to their autonomy, if not their survival. And some governments that still welcome a U.S.-led liberal order now contend with populist and other illiberal movements that oppose it.

Even at the peak of the unipolar moment, Washington did not always get its way. Now, for the U.S. political and economic model to retain considerable appeal, the United States has to first get its own house in order. China will face its own obstacles in producing an alternative system; Beijing may irk partners and clients with its pressure tactics and its opaque and often corrupt deals. A reinvigorated U.S. foreign policy apparatus should be able to exercise significant influence on international order even in the absence of global hegemony. But to succeed, Washington must recognize that the world no longer resembles the historically anomalous period of the 1990s and the first decade of this century. The unipolar moment has passed, and it isn’t coming back.

#### The strategy of liberal hegemony is unsustainable and causes massive violence

John Rennie Short 21, School of Public Policy, University of Maryland, “The United States of Stress,” Stress Testing the USA: Public Policy and Reaction to Disaster Events, edited by John Rennie Short, Springer International Publishing, 2021, pp. 167–180 Springer Link, doi:10.1007/978-3-030-65999-8\_7

The Costs of Empire

What deep structural flaws did the War on Terror and the invasion of Iraq highlight? In a word, Empire. The existence of a huge military, a global presence, and the accompanying domestic political will for, and national support of, military intervention all predisposed the United States to global involvement and military intervention. While the specific goals have shifted over the years since 1950, what remains unchanged until recently is the basic commitment to military superiority and countenance of the use of force around the world. That entails a vast military presence and an enormous defense budget. According to the Army’s own figures in 2020 there were 165,000 troops located in 150 countries.1 In 2020 the military budget of the Department of Defense was $721 billion and estimated to be $934 billion in 2020-2021. The total federal budget in that same year was around $4448 billion. There is the growing fiscal crisis of Empire. Before the War on Terror, in January 2001, the Congressional Budget Office was predicting budget surpluses into the future. After a decade of tax cuts and two wars, the budget surplus of $2 trillion turned into an annual deficit of $12 trillion. The War on Terror and tax cuts turned the United States into a credit risk, put pressure on the dollar and cramped other forms of government spending. Empire comes at a huge price. The United States is running up against the fiscal limits of Empire. Some deny these limits. Defense spending is sacrosanct for many in Congress. The real costs are often hidden by off-the-book accounting and passing the costs on to future generations in the form of borrowing now and paying later. The costs of Empire are unrelated to the threats we face. Costs increase despite, not because of, the threat levels. A vast, global and expensive military presence has to be paid for in blood as well as gold. The military expenditures skew the economic trajectory and lessen the ability of the federal government to build, innovate and educate. Defense spending, with its many supporters, bears down on the federal budget as a huge weight, forcing expenditure cuts onto the much smaller programs, especially the domestic discretionary spending that accounts for only around 12 percent of all federal spending. Programs that feed hungry kids are cut while bombers and rockets continue to be purchased. The USS Gerald R. Ford, introduced in 2017, cost close to $13 billion, part of a program to replace older carriers, with a conservative cost of $37 billion. Even the mid-life overhaul of one of these older Nimitz class carriers, USS George Washington, cost $3 billion in 2016. The US reigns supreme in military spending as it slides down the table of economic competitiveness, educational access, infrastructure spending and the quality and equity of its social programs.

The imperial posture is not only a huge cost but also a major definer of national goals. The most obvious is the tendency to militarize issues. Equipped with the world’s largest hammer, the United States too often sees the world’s problems as nails to be battered down. Not all problems are nails, and not all nails need hammering. The basic flaw of Empire is the tendency to military intervention. The invasion of Iraq was a disaster, but it was simply one of the more inept in a long line of military engagements and interventions since the Korean War. Empire is a major structural fault in the contemporary United States that makes the country vulnerable to costly foreign engagements.

US power is not only projected, but it is also transformed and often undermined by these engagements. The invasion of Iraq did not make the United States any safer; it did not destroy our enemies and it did little to offset staunch anti-American sentiment in the Muslim world and beyond. The Iraq invasions made the United States more vulnerable, less safe, and proved a fertile recruiting ground for anti-US terrorists. The war revealed in the most dramatic of fashions the risks of Empire and the consequent dangers of foreign military interventions.

Empire is inherently risky: it comes with a high price. Not all interventions can be easy and swift like the Grenada invasion of 1983 or the Persian Gulf War of 1991. Given its inherent dangers, why is there continued support for Empire? There is, of course, the insatiable appetite of the military-industrial-security complex. When hard material interests can be wrapped up in the warm blanket of patriotism, these interests can be secured and protected. The complex invokes the safety and standing of the nation while raking in the government contracts. And the threats, real and imagined, are continually ratcheted upwards. It was once the Soviet threat; now it is the terrorist threat. The average US citizen has a much greater risk of dying in an auto accident than in a terrorist incident. In 2001 42,197 people died in auto accidents in the United States, which is equivalent to the death toll in the World Trade Center disaster, each and every month of the year. Yet we do not have a national debate about road safety anywhere close to the terrorist threat. A sober assessment of the costs and risks would reveal a very different world represented by the military-industrial-security complex. The driver in the lane next to me poses a greater risk than an Al Qaeda terrorist. Anxiety is generated and specific threats are inflated because of the simple fact that jobs and careers, money, and profit in substantial numbers depend on a constant narrative of never-ending existential threats to the republic.

There is also the simple fact that imperial posture is easy to sustain because it seems to come at such a modest price for the majority of the US population. There is no national sacrifice. There is no draft because with an all-volunteer military, we subcontract the duties of citizenship to paid professionals. Military service is a minority occupation. Citizens have not been taxed to pay for recent imperial engagements. Empire seems to come at so little direct and obvious cost to the average American, and so the interventions can more easily garner support or at the very least fail to ignite unrest and civil disobedience. In order to sustain Empire, the real costs are hidden, deflected, and delayed. Passing the costs onto a professional military, reducing much-needed forms of public investment, racking up the deficit, and deferring the costs to subsequent generations all help to sustain Empire. Moreover, declaring war and invoking support for the troops also tend to consign critics to a marginal place that is too easily described as un-American, unpatriotic, and hence illegitimate.

The imperial strategy waxes and wanes as failures lead to retrenchment and successes stimulate expansion. After the Vietnam War there was some withdrawal. A defeated nation was also a divided nation. The scars of the Vietnam War, still not fully healed, were salved during the war against Iraq over its invasion of Kuwait. The stunning success encouraged the 2000-2008 Bush administration’s more expansive role for the United States in an invasion of Iraq. Immediately following the quagmire in Afghanistan, there was talk again of contraction. Michael Mazarr, a professor at the US National War College, writes of the strategic insol­ vency of US foreign policy and predicts increasing resistance to Empire around the world and looming economic deficits. Joseph Parent and Paul MacDonald write eloquently of the wisdom of retrenchment, the virtues of restraint, resisting the myths of Empire, and pursuing a humbler foreign policy that will neither cause global instability nor precipitate national decline. In fact, they argue that a “retrenchment dividend” could reinvigorate a sluggish national economy. Richard Haass writes of the need to distinguish between wars of choice and wars of necessity. Wars of choice, such as Iraq’s, should be avoided, while wars of necessity should be about clearly definable crimes against humanity. And even in such cases, United States involvement should only be countenanced when large numbers of people are threatened, and when there is an obvious solution, international cooperation, and limited costs. After the fiasco of Iraq and Afghanistan, the United States now proclaims a suitably subdued foreign policy.2 But will that survive the more expansionist role constantly pushed by the giant military-industrial-security complex?

Eisenhower warned his fellow Americans as far back as 1961 of the danger to the nation of building a huge military and a vast armaments industry. Militarism has both entered the bloodstream of US political and economic life and at the same time disappeared from the critical gaze and ordinar y experience of most Americans. The imperial posture is so divorced from the immediate lives of most Americans that they rarely question its existence. And while criticisms of big government become the standard political fare, there is no parallel criticism of big military, the very embodiment of big government. The militar y-industrial-security complex is very costly to support and displaces much-needed investment in domestic infrastructure, social welfare, job training, and, in general, leads to weakening of the nation’s global competitiveness. Big structural flaws require big vision to both see them and transcend them. It is time for Americans to reconsider their commitment to Empire and its attendant massive military interventionism. US imperialism has reached its limits. We are in an era of imperial overstretching, when military spending muscles out much-needed government investments and makes us vulnerable to fiascos. For every “success” such as the Gulf War, there is also the “failure” of an invasion of Iraq. It is time to stop, reconsider, and move to a more multilateral, smaller role in policing the world. Empire itself is just too expensive and too dangerous.

Other flaws emanate from the imperial posture. Military spending means less spending on aging airports and crumbling bridges. Imperial overstretch is paid for by domestic underspend. And in this regard, there is a connection between Empire and the underfunding of domestic infras­ tructure, which ultimately leads to events such as the flooding of New Orleans during Hurricane Katrina. Even the response to COVID was infected by the imperial posture. Money for health supplies allocated to the Pentagon by the Congress was diverted to defense contractors.3

The United States has imperial fatigue. Trump was elected in 2016, in part to put an end to the constant engagement of US troops across the globe. In a speech he spoke of ending endless wars. There is growing distaste with an establishment that had predicted that Hussein had a smoking gun, that the Iraqi people would welcome US troops, that Afghanistan could be won, and peace brought to the Middle East. Small engagements became unwinnable wars that never seemed to end. John Mearsheimer and Stephen Walt argue that the United States should abandon this permanent global military posture and instead focus on maintaining US dominance in the Western Hemisphere and resist, with strategic alliances, the rise of potential hegemons elsewhere. It is a form of hedging against rising hegemons without a vast global permanent military presence. The United States should, so this argument goes, aim to block the rise of potential hegemons, and here ever yone means China, with the help of allies only becoming involved if US interests are directly involved and challenged. Offshore balancing is not a retreat from Empire but what its proponents consider a more effective means to maintain US hegemony.

The strategy entails balancing against the possibility of regional hege­ mons emerging that could threaten the United States. A more radical grand strategy of restraint has been proposed. The broad contours of the argument are that the US faces limited threats because of its geographical position, so international alliances are not needed, and the military should be drastically downsized. In effect, it is a call for a foreign policy unfettered from Empire.4 The proponents of restraint argue that extensive alliances come with real costs of entanglement and possibility of entrap­ ment, that pursuit of primacy is too costly and not all that effective in reducing arms proliferation or encouraging democracy. After almost two decades of futile wars, the idea of pursuing a strategy of restraint appeals to more people in the United States. But it will take more than sophisticated, even correct, arguments to shift the grand strategy of the United States toward a strategy of restraint. Like a giant oil tanker ploughing through the oceans, US policy cannot change direction easily or quickly. There is too much momentum. And to shift metaphors: too many large and powerful appetites feeding at the trough of Empire. Yet a near-future shift is still possible. Decades of failed wars have moved public opinion toward a willingness to countenance a profound shift in US geopolitical strategy, which since the 1950s has had a life of its own separated from popular public opinion, subject to debate only within the political elites.

The necessity of a retreat from Empire is the single biggest lesson from the stress test of the War on Terror and the invasion of Iraq. This retreat need not be an isolationism or a rejection of a world role for the United States, but a call for reduced military spending, a more carefully crafted foreign policy that relies less on militar y power and more on the greater use of regional alliances and multilateral operations. The heavy burden of global policing needs to be lifted from the shoulders of the United States. The costs of Empire are the country’s biggest, deepest stress fractures.

Climate Change Climate change is a reality. Hurricane Katrina was an early warning of the new normal of increased risks from more extreme events. With sea surface temperatures rising there is a greater probability of larger more destructive hurricanes along the Atlantic Seaboard and Gulf coastline. The growing numbers of storms are not so much “natural” disasters, as events precipitated by human induced climate change. As average temperatures climb on the sea and land. We are moving into an era of more damaging storms, larger wildfires, longer droughts, and more severe floods. While individual cities and municipalities are responding in often imaginative and innovative ways, the national response is in too large a part shaped by hyper-partisan politics and climate change denial. While individual states and cities face the challenge, the national response has been weak and limited. National policies for climate change mitigation and adaptation are nowhere near enough to meet the increased risks. The United States is not alone in facing the impacts of climate change on weather patterns, it is of global concern and needs global solutions. However, the US lags behind. There is the triumphalist American view of the natural environment. For most of the life of the Republic the overwhelming emphasis was on defeating nature, subduing it, turning it into a resource, and treating it as a commodity. Nature was an inert receptacle for wishes and desires rather than a place of potential risk and possible hazard. Katrina showed the dangers of this mind-set. When you locate a city below sea level at the mouth of the giant river in a hurri­ cane zone, you are increasing the level of risk. And when you reduce the natural vegetation that protects the coast and build a canal that acts as a hurricane superhighway, you are magnifying the risks. Hurricane Katrina revealed the inherent dangers of ignoring the natural world. In order to deal with climate change perhaps a less triumphalist view of the human­ nature dialectic is more appropriate. Then there is the resistance to the basic science of climate change. Climate change denial is found around the world, but in the United States it reaches higher up the political hier­ archy with the backing of powerful politicians long in the pocket of oil and gas interests. The United States has some of the best climate scien­ tists as well as some of the most highly placed climate change deniers. The paradox deepens as the risks mount. The impacts of climate change pose an existential threat. The failure to mitigate and adapt to climate change are perhaps the greatest risks that confront the Republic. Katrina was just a taste of things to come. Infrastructure Deficit The United States is facing an infrastructure deficit as our levees, roads and bridges age, and are neither renewed nor maintained. The result is a growing risk of infrastructural collapse that was dramatically revealed by Hurricane Katrina. When you fail to build the levees properly or main­ tain them to a safe standard, then the elevated risks make a disaster almost unavoidable. The flooding of New Orleans was not a natural disaster; it was a human-made catastrophe as badly constructed and poorly maintained levees simply collapsed. The collapsing of the levee walls dramatically highlighted the dangers of ignoring, delaying, and under­ funding vital public infrastructure. The infrastructure deficit is made worse by climate change that raises the risk of catastrophic events. We need better levees, power grids, bridges and dams. We need other neces­ sary infrastructure to improve our lives and strengthen our economy. The infrastructure deficit continues to grow generating new hazards and increased risk just as climate change continues to unfold raising the prob­ ability of serious storm events, major fires, flooding, and drought. Katrina underscored the cost of ignoring climate change and underfunding infras­ tructure. A combination of one or both of these constitute continuing stress fractures that threaten our cities, communities and citizens. It is a stress that will only get worse unless climate change mitigation and adaptation is widely addressed, and infrastructure improvement becomes a greater priority than tax cuts or aircraft carriers. The Enshrinement of Homeownership The financial crisis revealed a number of flaws especially the dangers of a housing policy devoted almost entirely to encouraging and extending homeownership. Owning a home became the “American Dream” and the term “dream” is appropriate since it also entails a sense of fantasy. What was lost in all the hype was that homeownership, for most people, involves a huge debt encumbrance, a heavy indebtedness for the vast majority. The risks of this giant credit burden were downplayed. It is only when the prices drop, and the confidence vanishes that the underlying reality of homeownership becomes apparent. The uncritical commitment to homeownership is promoted and defended by numerous interests who profit from the building, buying, selling, and mortgaging of homes. Homeownership has its place but not as the only form of housing to be protected, subsidized, and promoted. When homeownership is pushed further down the income scale then the risks are heightened. The answer is to make people more aware of the risks, which is not difficult to do in the wake of the crisis, but also to stop subsidizing homeownership. Eliminating all tax relief on mortgage interest and introducing, modest at first, capital gains taxes on profits from selling homes will put homeownership on par with rental housing. Currently, we subsidize homeowners to the detriment of renters. This support of homeownership is also one of the more regressive social poli­ cies, befitting as it does both absolutely and relatively the higher-income households. The financial crisis revealed the structural flaw of the mindless promotion and generous subsidization of homeownership. The Neoliberal State: Deregulation and Regulatory Capture The financial crisis and the Gulf oil spill both revealed, in their different ways, the risk of an overeager deregulation and of regulatory capture. Reassessing the rules that the government uses to regulate private industry should be a common practice. Regulations need to be regu­ larly assessed as old rules may become embedded especially as new and different realities unfold. And there is always the danger of a bureaucratic inertia that can ossify and calcify. Bureaucracies have an inbuilt tendency to extend their reach and their size. So, yes, a critical gaze at government regulations is vital to good governance and ensuring dynamic markets. However, the deregulation of neoliberalism is in effect a reregulation that helps big business more than small businesses, workers, and, often, consumers. The growing concentration of power in a few companies in vital sectors of the economy tends to encourage this form of reregula­ tion. We need only look at the oligopolistic power of Apple, Google, Facebook, and Apple to see the power of large dominant corporations to influence the regulatory regimes. The steady drift of deregulation at a time of greater risk is the recipe for the disasters such as the financial meltdown and Gulf Oil spill. The financial crisis owes its origins to the deregulation of the finan­ cial sector coupled with the endless encouragement of homeownership that turned mortgages from loans to financial products traded along a long chain from originators to banks and investors around the world. Mortgage-backed securities became one more Wall Street product to be bought and sold, traded, and hedged. The risks were increasing just as the regulations were weakening. Moral hazard allowed the large institu­ tions to pocket the gains of high risk but to offload the costs. Regulatory capture meant that the institutions designed to protect us did not do their job. Risks were discounted, profits were privatized, and costs were socialized. The Gulf oil spill highlighted the impacts of regulator y capture in an area of high risk. We are now in a world of permanently tough oil where the risks escalate as drilling goes deeper, further offshore, and into more inhospitable territory. We are at the very edge of our technical ability and often beyond acceptable safety margins. The brute reality is that we can still get oil, whether drilling in the deep in the ocean, unlocking it from the tight embrace of Alberta tar sands, or cracking it open from shale formations, but the costs are increasing and the risks of some form of environmental disasters are escalating. The disaster of the Gulf oil spill resulted from a barely regulated industry involved in high-risk endeavors. Gulf oil drilling is a textbook example of regulator y capture. In a world of rising risk and reduced oversight, a disaster is always waiting to happen. The Health of the United States COVID-19 swept around the world. But the United States that had some of the highest death rates for any rich country in the world. Our near neighbor, Canada had a death rate roughly a third of the United States. According to the well-respected Johns Hopkins Coronavirus Resource Center, while the US death rate was 151 per 100,000 population, the corresponding figure was 124 in France, 84 in Ireland, 58 in Canada and 13 in Finland. Surely, there can be no stress test that is so revealing about the state of health in the United States as a health system that provides the greatest coverage to the affluent and employed and minimal care for the lower income and unemployed. The public health system meanwhile is grossly underfunded. The federal public health establish­ ment was rendered ineffective because of fragmentation of powers and the influence of partisan political appointees. The United States response was a disgrace that revealed the poor health of the nation. Unequal and Divided In a recent book, Robert Putnam and Shaylyn Romney Grant tell the stor y of the United States from 1870 to the present day. In the beginning of this era there were marked and growing inequalities. Then there was slow steady increase in equality and commitment to community. Espe­ cially after the New Deal. inequality declined with a growing commit­ ment to civic responsibilities. Then, since the 1960s things reversed. Inequality widened and self-interest became enshrined. Political polar­ ization increased to almost dysfunctional levels of governance.5 The five events discussed in the book take place against the broader trends in this unraveling of community. It was revealed, for example, in the state and federal response to Katina. The government response to the drowned city was a sad testimony to the lack of commitment at all levels of government to the most vulnerable. Hurricane Katrina exposed the limited claims that the weakest in the United States can ask of their government. As thou­ sands were left stranded in the city the inequalities of class and race were clearly revealed in the people left behind. The laissez-faire attitude to protecting our most vulnerable were revealed for what they are: harmful, dangerous, and ultimately disastrous. The federal response to the financial crisis was to bail out the bankers and financial institutions while close to 8 million households were evicted and millions more were made unemployed. No one was charged and soon after, Wall Street was back to usual, privatizing profits and always looking to socialize the costs. During the pandemic, the federal commitment to the stock markets was unwavering and relentless. Meanwhile, much- needed payments to the unemployed soon evaporated. The higher rates of infection and death due to COVID-19 among the poor, the most vulner­ able, and racial and ethnic minorities was like an X-ray, that provided a stark image of the underlying structural inequalities of US society. Before I left the UK in 1990 to live in the United States, some friends and colleagues held a party for me. One of them, who has spent considerable time in the United States said, “Things will work out well, but remember, do not get poor, do not get Black and do not get ill.” I thought he was only joking. A System Under Stress

The five events, collectively, also reveal systemic fractures that spider web across the political landscapes and public discourses in contemporary United States. The cracks go deep.

The first is that, in all cases, risks were undercounted: whether it be in the blank check given to an administration in the wake of 9/11, the lack of proper preparedness for hurricane damage in New Orleans and along the Gulf coast, the deregulation of the financial sector, the lax oversight of the oil industries involved in deep-sea drilling, or the too rosy assumptions about the impact of COVID-19. Discounting risk is perhaps innate to a successful economy. The dynamism of the United States is built upon taking risks. Risk-taking has its uses, but in a complex ever-changing world, risk assessment needs to be undertaken much more seriously. Caution in the face of uncertainty is not cowardice but good sense. There is also a clear need to have a more effective pricing of risks and a fuller discussion of who benefits and who pays for the risks. We need a full cost-benefit analysis of the public obligation to private risks as part of broader discussion of the public and private apportionment of the costs and benefits of risk. In the deregulated world of risky behavior by giant companies, while profits are always privatized, costs are invariably socialized.

Second, matters were made worse because just as risks increased, the oversight of these risks was reduced. There was cognitive capture as well as regulatory capture. Declaring the War on Terror suspended, at least for a while, full and honest discussion of the costs of war. Patriotic fervor replaced sober analysis. Economic development along the Louisiana coastline was used to trump environmental regulation and led to the continued destruction of the wetlands and the creation of hurricane superhighways. The financial sector lobbied successfully that deregulation was necessary to make it competitive and profitable. In the risky world of global financing and the hazardous world of deep-sea drilling, private companies achieved regulatory capture of the government agen­ cies supposedly overseeing them. The lack of proper accountability of the healthcare industry that has allowed ballooning of costs and profits yet limited gains in public health. In all these cases, risks were increasing as oversight was declining. The five disasters emerge in the yawning space between lack of oversight and rising risk. Actors were all operating in the widening chasm between rising risks and lax oversight. A space was created that allowed risks to be deflected, discounted, and ignored.

Third, each of the cases revealed deeply flawed metanarratives. These are the big stories that are used to justify but also to marginalize or stifle debate. They have achieved discursive capture. In the case of the Iraq War, calls for patriotic support for the troops delayed effective criticisms of a flawed and dangerous strategy. In the case of New Orleans, proper environment management was continually undercut by the argument that economic development was paramount. The financial crisis was, in part, a result of the uncritical promotion of homeownership, despite the risks, and rampant financial deregulation, again despite the risks. Although in this case “because of the risk” is more appropriate since the bankers knew that moral hazard would ensure that higher risk meant more profits while the costs would be borne by the general public. The Gulf oil spill origi­ nated in the belief that the problems of energy supply in the United States can be met by more drilling or fracking for oil. COVID-19 was brushed off as little more than influenza by too many in positions of power. The five disasters revealed the flaws of the dominant political mind-set.

Fourth, there is an element of magical thinking that the verities of the current political philosophy of neoliberalism are the answer to our myriad and multifaceted problems. This is cognitive capture, the deep capture of US political discourse. Risks can be more easily discounted when simplistic arguments are employed: making America safe and strong, creating more jobs, promoting homeownership, and unleashing private industry from the shackles of government regulations. It should come as no surprise at a time of growing uncertainty, with risks increasing, that the ideological debate becomes simpler. Complex issues are headlined as “support the troops,” “jobs, jobs, jobs,” “drill baby drill,” “government is the problem,” or “it will soon disappear” are easy to present, represent, and support. The arguments underlying some of these headlines have some merit, but they are used invariably not to stimulate critical thinking but to choke it off. The paradox of the contemporary moment is that, just as religious fundamentalism arises during times of rapid change and uncer­ tainty, political philosophies and corresponding public policies become suitably simplistic just as the issues became more complex, less amenable to the simple solution. Let us take just one example. Government regulation may be cumbersome and can limit economic growth, but it can also enforce safety standards and protect the environment. It all depends on the specific case in point. In some cases, deregulation may work; in others it may be inappropriate. In a complex world of accelerating change, we need subtle and adaptable policies and not the simplistic sloganeering and the single, unchanging response. Simplistic political philosophies and cliched policy responses emerge just as their ability to meet the challenge shrinks. When the argument becomes reduced to “government is the problem,” or “all deregulation is good,” or “private health care is best,” then we are in a theocracy of ideas untouched by empirical reality. What we need is not simple slogans but more complex narratives. Rather than a false debate between small or big government we need to be arguing for smart government.

The disasters were heightened and worsened because they unfolded again a landscape of discounting of risks and the deregulation of oversight of risky enterprises, unchallenged metanarratives in which complex reali­ ties are subject to the cognitive and discursive capture of private interests, the magical thinking of neoliberalism, and the deep capture of political discourse by simplistic ideologies.

The United States is a resilient society, but its resilience depends on its openness to new ideas not to its imprisonment by old ones. The five disasters reveal many things but perhaps the most important is that in a complex world we need our governing ideas to be connected to current reality not past ideologies or the current obsessions of hyper partisanship. The United States is made “more perfect” when we develop policies that are based on an unblinking gaze at the world as it is rather than an imag­ ined world of simple eternal verities and that are crafted more for the general good than for the private gain of the privileged few.

### AT: Hegemony Turn---AT: Brands

#### Reject Brands---open conflicts of interest

Adam Johnson 19, contributing analyst for FAIR.org, “Bloomberg’s Armsmaker-Funded Columnist Wants You to Know: Military Spending Is Woke”, 3/19/19, https://fair.org/home/bloombergs-armsmaker-funded-columnist-wants-you-to-know-military-spending-is-woke/

In a piece explicitly defending bloated military budgets, however, perhaps it would be useful to know what exactly the “Center for Strategic and Budgetary Assessments” is. We can start by reading this section taken directly from their website (unabridged):

Below is a list of organizations that have contributed to our efforts over the past three years.

Aerojet Rocketdyne

Army Strategic Studies Group

Army War College

Austal USA

Australian Department of Defence

BAE Systems Inc.

Carnegie Corporation of New York

Chemring Group

Defense Advanced Research Projects Agency (DARPA)

Department of the Navy

Embassy of Japan

Fincantieri/Marinette

Free University Brussels

General Atomics

General Dynamics—National Steel and Shipbuilding Company (NASSCO)

Harris Corporation

Huntington Ingalls Industries

Johns Hopkins University School of Advanced International Studies

Japan Maritime Self-Defense Force

Kongsberg Defense Systems, Inc.

L3 Technologies, Inc.

Lockheed Martin Corporation

Maersk Line, Limited

Metron

National Defense University

Navy League of the United States

Northrop Grumman Corporation

Office of the Secretary of Defense/Office of Net Assessment (ONA)

Office of the Secretary of Defense/Office of Cost Assessment and Program Evaluation (CAPE)

Office of the Under Secretary of Defense for Acquisition and Sustainment (AT&L)

Polski Instytut Spraw Miedzynarodowych (PISM)

Raven Industries

Raytheon Company

Sasakawa Peace Foundation

Sarah Scaife Foundation

SEACOR Holdings

Secretary of Defense Corporate Fellows Program

Smith Richardson Foundation

Submarine Industrial Base Council

Taiwan Ministry of National Defense

Textron Systems

The Boeing Company

The Doris & Stanley Tananbaum Foundation

The Lynde & Harry Bradley Foundation

United Kingdom Royal Air Force

Brands is a senior fellow at an organization funded almost entirely by those with a clear interest in the upcoming $750 billion defense budget Brands is pushing for. While we don’t have a tax filings for CSBA since Brand was hired there, and thus we do not know his specific income, the average senior fellow at the organization, as of its last tax filing, makes just under $300,000 a year.

They can call it whatever they wish—”think tank,” “nonprofit,” “Center”—but by any objective metric, this organization is just a lobbying entity for the weapons industry and Western militaries. A cursory glance at their policy briefs reveals they, unsurprisingly, always support more spending on weapons systems. Unlike other weapons-funded lobbying groups such as Center for Strategic and International Studies (FAIR.org, 8/12/16), they don’t even bother throwing some banks or soda companies in there to give the appearance of being anything other than a weapons industry trade group. (Don’t be fooled by the “Sasakawa Peace Foundation”—that’s an organization founded by far-right Japanese business executive Ryoichi Sasakawa, who was jailed as a war crimes suspect after World War II, and who once described himself as the “world’s richest fascist”—Time, 8/26/74.)

Setting aside its disqualifying conflicts of interest, Brands’ piece is an assortment of sophistry about how weapons systems create middle-class jobs for Americans. Given that any meaningful definition of “progressive” must take into account the 95 percent of the world who are not Americans—e.g., those on the other end of these weapons systems and military occupations—the column rests its premise on a massive category error.

### AT: Hegemony Turn---AT: Think Tanks

#### Ignore evidence from pro-hegemony think tanks---they’re part of an ideological project designed to define the outer bounds of the possible.

Inderjeet Parmar & Shihui Yin 21, Parmar is a professor of international politics, and head of the Department of International Politics at City, University of London and an Honorary Research Fellow at the University of Manchester; Shihui Yin is a PhD Candidate in East Asian studies at the University of Edinburgh, “American Foundations, Think Tanks and the Liberal International Order,” Handbook on Think Tanks in Public Policy, Edward Elgar Publishing, 03/16/2021, pp. 86–98

INTRODUCTION

American think tanks and their corporate-foundation sponsors, as well as elite networks, have been highly significant in key moments of the life of the liberal international order: at its conception and creation in the aftermath of the First World War and inter-war years, throughout the Second World War and subsequent Cold War, from the end of the Cold War into the post-Cold War era and during the current crisis of the liberal international order. Liberal American think tanks and foundations are both symptoms and drivers of major domestic and global power shifts, and they play key roles in managing change and developing concepts for governing, new strategic approaches and policies. Their fundamental power-technology is the 'elite knowledge network’ in and through which are created spaces for ‘thinkable thought’, that is, the construction of the boundaries of options for change, in which knowledge for use by policymakers is nurtured. Such elite networks house the core organizations and actors at the heart of what Antonio Gramsci calls ‘hegemonic projects’ that conceptualize, develop, maintain, manage or recalibrate imperial power, challenging extant ways of explaining howr think tanks, foundations and power work in liberal-capitalist democratic societies. This chapter aims to elaborate and evidence the Gramscian case through consideration of three historical and contemporary instances. First, the transition from British to American raciahzed, elitist and imperial-hegemonic power through the roles of the (American) Council on Foreign Relations (CFR) and (British) Chatham House (CH) in Paris in 1919 and up to 1945. Second, the roles of foundations and think tanks in the transition to post-Cold War democracy promo¬tion’ or what some term a strategy of‘liberal hegemony’ to replace Cold War con¬tainment; and, third, a brief consideration of the politics and potential of the emerging Koch-Soros funded think tank - the Quincy Institute for Responsible Statecraft (QI) Is the latter saving’ or ‘burying’ the liberal international order?

ELITE KNOWLEDGE NETWORKS: THE ESSENCE OF POWER OF FOUNDATIONS AND THINK TANKS

‘Elite knowledge network’ refers to a system of flows (of ideas, people, money), a technology of power embedded in, crystallizing and dynamizing the Gramscian concept of ‘hegemony’, indicating that cooperation and bridging divides between the state and private elites, between politics and civil society, between the govern¬ment and corporate elites - ‘power with' other kindred interests rather than power as a zero-sum game - was the strategy that created the domestic bases of American hegemony. The big foundations, in this respect, are a central part that coheres the American foreign policy elites or establishment (Hodgson, 1972; Parmar. 2012), organically connected to, funding and enabling the think tank (and the university) to develop concepts, strategies and policies for governing the world ' I hc founda¬tions have two main long-term strategic functions - internally and externally - to socialize and incorporate elites into a particular hegemonic project The foundation networks’ internal functions relate to attracting, socializing and integrating elites into the netw ork system by providing funds, know ledge exchange, money How s and inter-organizational connections Academic scholars from prestigious universities and think tanks, for example, are increasingly socialized into these elite networks because large research grants from these foundations arc often structured for pro-ducing policy-oriented academic knowledge and other politically moderating effects on political activities. External functions relate to knowledge produced by network members that is considered as legitimate and prestigious and that is taken seriously by all, especially policymakers. Elite networks also combat opposing ideas that chal-lenge their conceptions of America’s global role (Parmar, 2019b).

American corporate-philanthropic foundations, especially the so-called Big 3 (the Carnegie, Ford and Rockefeller Foundations), have played significant roles in con-structing and maintaining US hegemony through long-term close cooperation with the American state, strengthening a historically weak federal executive, and undermining and marginalizing ‘isolationism' by promoting internationalism and interventionism. These major foundations arc byproducts of the corporate giants of the late nineteenth and early twentieth centuries With hundreds of millions of dollars of donations - ‘scientific giving' - the Big 3 championed positivistic ‘scientific’ knowledge that would be of practical use to policymakers, urban planners and state-builders. As such, these are organizations imbued with the modernizing and ‘scientific spirit\* of the Progressive Era they invest in ideas and mobilize social-scientific knowledge to manage the potentially catastrophic political effects of large-scale socio-economic change: industrialization, mass immigration, urbanization and the attendant rise of radical political movements (Amove, 1980; Eisenach, 1994). The Big 3 also pio¬neered management and social engineering to inaugurate a reformed economic and political order both domestically and globally. In other words, in the long term, they increasingly established formal and informal national, international and global insti¬tutions to promote American power underpinned by liberal internationalist thinking and sponsored university' and other programmes to educate and train generations of graduates for service and leadership within and of them. This chapter considers three examples over time to indicate the elitist, racialized and imperial character of the liberal international order < Parmar, 2016, 2018) that key think tanks and foundations conceived and built, and which is currently in a period of transition if not crisis, increasingly challenged by popular forces within core slates and emerging powers demanding that power in international institutions be redistributed

THE COUNCIL ON FOREIGN RELATIONS AND CHATHAM HOUSE: THE BEGINNING OF THE LIBERAL INTERNATIONAL ORDER

The Royal Institute of International Affairs (known as Chatham House) and the CFR were initially conceived as two branches of a single Anglo-American Institute of International Affairs, with identical aims. They started life at the Paris Peace con-ferences of 1919 in the aftermath of bloody global warfare and the effective death knell of colonialism, and the rise of nationalism, democracy and social revolution. I hey championed the I eaguc of Nations as a key vehicle for an Anglo-American-led international order (Ledwidge & Parmar, 2018). They later became the two most prestigious think tanks of the inter-war period, acting as strong forces of elite consensus-building and spreading their ‘model' to Australia, New Zealand, South Africa, Canada and some parts of Europe (Parmar, 2004a). The two bodies were reformist, not revolutionary, and hoped to reconstruct the world without formal empires through a ‘new world order’ that more or less veiled their liberal internation-alist imperialism and attendant elitist and pan-Anglo-Saxonist thinking (Bell, 2014; Mazower, 2009; Vucetic, 2011). They championed science and internationalism but were deeply imbued w ith theories of racial and class hierarchies through which Anglo-Amencan and Western power and culture w ere seen as superior (Ledwidge & Parmar, 2018; Ledwidge et al., 2013; Parmar, 2002). Both organizations were part of the global elite network which bridges influential philanthropic foundations, elite uni¬versities, big financial and business corporations, and foreign policy establishments (Wala, 1994), Moreover, Cl I and the CFR were funded generously by three major corporate foundations mainly Carnegie and Rockefeller, and. later. Ford, which benefit existing elites by acting as “gatekeepers of ideas” through funding certain lines of research at the expense of others' (Parmar, 2004b. p. 38). The Rockefeller Foundation, for instance, was the biggest donor to the Cl- R, investing approximately US$700 000 betw een 1928 and 1945. In addition, many CFR leaders occupied posi¬tions on foundation boards of trustees. Needless to note, both think tanks attracted experts and academics who generated ‘useful knowledge’ for policymakers and helped with top-down public opinion management (Lippmann. 1922; Parmar. 2000).

CH and the CFR represented declining and rising hegemonic powers’ elites, respectively, and drew their leaders and members from the upper echelons of their political, economic and social elites. Pie two shared a deep-rooted elitism, non-partisanship on foreign issues, socialization in ‘muscular Christian culture, and colonial-imperial and racist attitudes of Anglo Saxons' superiority (Parmar, 1995a, 2002, 2004b). Despite their language of liberalism, freedom, self-determination and internationalism, the two think tanks' terminology cloaked their aims of hierarchy, racism and imperialism CH was the direct result of the Round Fable organization’s long-term strategy to re-imagine, continue and enhance its imperial-reform mission but with a veil of scientific impartiality. Their scientific elitism was exclusively reserved for an elite minority with ‘training’ and qualifications to ‘correctly’ assess social and global issues; and it fell to those elites - white, English-speaking elites - to make ‘sound’ policy and to educate’ the masses. In this vein, the problem of the Anglo-Saxon race was a key factor in the mind of Pans delegates, and the movement for racial equality needed careful handling in the post-1918 crises of colonial power Key CH founder Lionel Curtis proposed that, in order to best achieve the particular interest of several major powers, it was essential to design a national policy for advancing a ‘universal interest' through the conception of the interests of international society [emphasis in original] (Dockrill, 1980, p 667) However, when Japan put forward a racial equality principle. Lord Robert Cecil, another leading CH founder and head of the official British delegation at Paris, considered the proposal threatening and outlandish This was because pan-Anglo-Saxonist elites inherently upheld the idea of white, English-speaking countries first, with primacy over any other ethnic groups on the planet. Hence, racial thinking’ (defined as anti-colonial and therefore anti-white) could potentially disrupt the world system, leading to a radical change ‘from [whiles’] racial confidence to racial fear’ and any racial (that is, anti-colonial) conflict wrould ultimately undermine the imperial status quo (luredi, 1998, p 2).

CH and the CFR were central to the practical building of an Anglo-American alli-ance before, during and after the Second World War and, therefore, of the rationales and institutions of the post-war liberal international order. In the inter-war period the two think tanks actively repaired Anglo-American relations through a myriad of means including deep personal friendships and correspondence, and joint study groups on practical sources of friction between the rising and declining imperial hegemon, such as naval rivalries, trade practices, currency stabilization, war debts and economic competition (Parmar, 1995a, 1995b, Parmar, 2002, pp. 53—75; Roberts, 2001) I here were official and unofficial visits crisscrossing the Atlantic by think tankers such as historian Arnold Toynbee and American businessman and foreign policy expert Whitney Shepardson, joint conferences to discuss North Atlantic relations, the future of India and imperial preference, as well as direct policy-related influence over official decisions, such as the 1940 destroyers-for-bases agreement The British ambassador to the US from June 1939 to December 1940 was. after all, Lord Lothian (Philip Kerr), a key leader of the imperial Round Table movement and of CH. The think tanks' foreign policy planners w ere integrated into their respective Foreign Office and State Department divisions for post-war foreign policy planning and. in that capacity, shared ideas about the foundational principles and institutions of the liberal international order with Anglo-American power at its heart (Shoup & Minter, 1977). The racialized, elitist and imperial character of the think tanks, their respective foreign offices and political leadership were fully displayed in their affin¬ity and support for a ‘federal union’ of Britain, the US and other English-speaking states (Streit. 1939), the discussions about the inadequacies of the isolationist’ or ‘backward’ masses and their need for elite guidance and mobilization, and of the superiority of w hite elites over colonial subjects.

CH and the CFR w'ere at the very core of an Anglo-American establishment united behind a concept of a new world order based on Anglo-American power embedded within a system of international institutions such as the World Bank. International Monetary Fund and the United Nations They were strong supporters of the Marshall Plan and of the North Atlantic Treaty Organization (NATO) during the Cold War to 'contain' Soviet expansionism Respectively, they challenged and undermined 'America-First isolationism' and 'die-hard imperialism' and built and managed what liberal internationalists refer to as the ‘rules-based’ liberal interna-tional order (Parmar, 2004b). It is that order's champions, in effect, that collectively celebrated the 'end of history’ when the Soviet Union collapsed and the Cold War ended (Fukuyama, 1992). opening the way to conceptual and political confusion and anxiety, before American liberal elites forged a new, aggressive but unstable, foreign policy consensus around democracy promotion.

AFTER THE COLD WAR: THE RISE OF DEMOCRATIC PEACE THEORY

The Cold War’s end also signalled the death knell of America’s principal national security rationale and global strategy' and the stated reasons for its military -industrial complex: The Soviet threat’ was no more, logically making its 'containment' obso¬lete. American power, which had independent expansionist and hegemonic purposes, however, required a new rationale for continued global military power projection, particularly because of increasing domestic demands for a peace dividend’ that would divert government spending to the poor, to schools, to crumbling cities and towards health care. The American foreign policy establishment’s replacement for containment prioritized democracy promotion, an old idea boosted by a newly dis¬covered underpinning social science 'law ’ - democratic peace theory (DP I ). DPI' not only provided a rationale for continued US global intervention and extended military power projection, but it also helpfully divided the globe into ‘zones of peace’ and 'zones of turmoil’, the latter requiring pacification through democrati¬zation (Smith, 2006). Such were the sources of President Bill Clinton’s ‘democratic enlargement’ and ‘engagement’ strategies in the 1990s, with democracy principally defined as 'market democracy’, conflating a specific economic model as the essential foundation of political democracy. The major US foundations, particularly Ford and Carnegie, played key roles in developing the underlying theoretical underpinnings and in taking DP I into mainstream academia and disseminating its promise into party politics. In effect, such efforts made DPT the central strategic rationale for American post-Cold War national security, a broadly bipartisan project that extended into the post-9/11 era of regime-change wars (Parmar, 2013). It is this liberal hegemonic project - which critics suggest resulted in almost continuous American warfare around the world - ‘The hell of good intentions’ or the 'great delusion’ - that today stands condemned by President Donald I rump It is also critiqued by realists of various stripes and by a new think tank that promotes ‘strategic restraint’, an end to values-dnven military' conflict and ‘endless wars’ — the Quincy Institute for Responsible Statecraft (Mearsheimer. 2018; Quincy Institute, 2019; W'alt, 2018)

DP I gained widespread popularity among the liberal epi stem ic community - or organic intellectuals — and the state. The underlying thesis is that advanced liberal democracies do not go to war with one another mainly due to the governmental structural characteristics of democratic countries. Though traceable to the writings of Immanuel Kant, it was Princeton scholar Michael Doyle who helped bring the theory to initial prominence in the field of international relations. With a Ford Foundation research grant (1979-82) of over US$400 000 (to support ‘Research on the Future of the International Economic Order’), Doyle conducted the research that led to the publication of several articles outlining the DPT thesis (Doyle, 1983). That work coincided with and was boosted by President Ronald Reagan's speeches emphasizing the inherently peaceful character of liberal foreign policies and the formation in 1983 of the National Endowment for Democracy (NED) to promote democracy abroad

However, while Doyle fully appreciated the war-like features of ‘liberal impe-rialism’, including enthusiasm for waging wars on ‘non-democratic’ regimes, the Clinton administration ‘securitized' DP I to justify continued US global leadership and interventionism In addition. International Security', a top-ranked policy-oriented journal at the Ford Foundation and Carnegie-funded Belfer Center for Science and International Affairs (at Harvard) published a series of articles for the development of democratic peace from 1996. I he Helfer Center is a university-based policy-oriented think tank w ith over 100 practitioners and scholars from government, military and corporations, including William Perry. Bill Clinton’s secretary' of defense, Robert Zoellick, president of the World Bank and former deputy secretary of state, histo¬rian Niall Ferguson and Paula Dobnansky. the George W. Bush administration’s under-secretary of state for democracy and global affairs. Other prominent academic journals, such as World Politics, also promoted the implementation of DP I and its securitization in the process of moving from a pure academic theory to American foreign policy (Parmar, 2013).

Stanford University’s Larry Diamond, who served the George W. Bush admin-istration, contributed to democracy promotion through serving on the Carnegie Commission on the Prevention of Deadly Conflict in the 1990s Diamond also, since 1990, has co-cdiled NED’s Journal of Democracy and translated DPT to the Progressive Policy Institute of the Democratic Party. He argued that, alter the Cold War, the US had a golden opportunity To reshape the world’, to secure national sov-ereignty and allow American interventions overseas to defend democracy (Diamond, 1991). Diamond flatly rejected President George H W Bush’s new world order as too w edded to order, stability and the balance of power.

THE KOCH FOUNDATION AND THE RECALIBRATION OF AMERICAN GRAND STRATEGY

‘Democracy promotion’ under a banner of liberal hegemony, however, created numerous problems. US triumphalism alter the Cold War has diminished signifi-cantly, and the great liberal dreams were sourced in a ‘great delusion’ (Mearsheimer, 2018) or created a hell of good intentions’ (Walt, 2018). For example, since 1993, North Korea, Pakistan and India have all tested nuclear weapons. The US military' invasions of Afghanistan and Iraq after 9/11, followed by regime change in Libya, were/are costly disasters that have weakened America’s overall position. Liberal interventionism in the Middle East created several failed states and refugee crises in Libya, Yemen and even Syria. In addition, China’s power and ambitions have grown steadily, Russia seized the Crimea and interfered in several other states, and America's relations with Moscow' are worse than at any time since the end of the Cold War/ According to Freedom House, 2017 marked the twelfth consecutive year of an overall decline in global freedom and democracy (Abramowitz, 2018). fhe European Union has also experienced destabilizing crises (Greece, Brexit). It is clear that there are very real limits to American power. Mearsheimer noted that it is impossible to pursue liberal hegemony in a bipolar or multi-polar system. Hence, America’s liberal dream and its grand strategy of primacy has been slowly eroding.

Powerful ideas constitute a crucial component of a hegemonic project. Given today’s crisis of liberal internationalism. President Trump's 2016 electoral triumph, raised great hopes among foreign policy realists that he could overhaul America’s decades-long grand strategy of primacy or liberal hegemony to a less interventionist one (olTshore balancing or restraint), keeping the US away from spending its treasure and blood in avoidable wars (Layne, 2017). Realists like John Mearsheimer, Stephen Walt, Christopher Layne and others believe that it is a good strategy for America to rethink its alliance relationships by burden-shifting or risk-shifting rather than burden-sharing to get regional powers to carry as much of the costs and responsi¬bilities as possible to save American lives and to husband its strength (Layne, 2017; Mearsheimer, 2018). Accordingly, Walt’s presentation al a 2016 Koch-Brookings (Institution)-Pohtico-sponsored joint conference laid out a strategy of 'offshore balancing’ and argued that the US should reduce its military spending, but maintain its military superiority in Europe and preserve sufficient resources to accommodate potential rising hegemons in the three most strategic regions of the world (East Asia, Europe and the Persian Gulf) without getting involved in costly conflicts or wars (Rosen, 2018).

Walt's keynote is summarized in the Koch-Brookings-Politico conference report, arguing that such offshore balancing ‘would maintain the United States’ military superiority in the Western Hemisphere and also maintain sufficient military power to challenge potential rising hegemons in Europe, East Asia, and the Persian Gulf without becoming involved in conflicts that do not directly threaten the security of United States' (Charles Koch Institute, 2019). This is essentially the line advanced in Walt’s latest book, The Hell of Good Intentions (2018), in which he critiqued Trump for incoherence and lack of policy follow-through while broadly supporting the pres¬ident’s critique of the disasters of post-Cold War liberal hegemonic strategies I rump is therefore viewed as a blunt instrument, widely reviled as a ’buffoon’, but one who has correctly called out the liberal establishment s foreign policy disasters in (alleg¬edly) trying to ‘do good' in the world as opposed to taking care of ‘vital interests’ This line of thought is echoed by liberal internationalist and democracy promotion scholar Tony Smith, who calls on the liberal foreign policy elite to curtail its imperial hubns and show more modesty and restraint (Smith, 2019).

It should be noted, however, that Koch has not created or in any sinister way suborned scholars - Walt, Mearsheimer (University of Chicago), Layne (Texas A&M University) and others have been arguing the case for restraint and realism for years. The libertarian Koch complex is enabling a politically more significant platform funded w ith large grants that might broaden the debate and allow their ideas to achieve something approaching the heft of the liberal hegemonic establishment, funded by the Fords, Carnegies and Rockefellers for around a century or more. Given the elitist Kochs' success in funding so-called grassroots movements (Skocpol & Hertel-Fernandez, 2016; Skocpol & Williamson, 2016), this overt elite project seems designed to make respectable strategic restraint’ and train new academic cadres for a more decentred, multi-polar world in which the US would remain the dominant power in every region and domain. This new faction al the periphery of tile US foreign policy establishment. however, opens up newr political possibilities for opponents of war and militarism and broadens the debate over what kind of global-imperial hegemon the US might become.

Given its backing by the Kochs’ billions, this new force is one to watch. It appears to want to place I rump’s 2016 campaign rhetoric against the liberal international order - NATO, etc. — on a sound political and intellectual footing. It will very likely outlast the Trump administration. The key issue is, as Layne points out. although Trump wants (however errati¬cally) to reshape America's grand strategy towards otTshore balancing, it would be extremely difficult for him alone to break the post-1945 foreign policy estab-lishment’s consensus simply because there are so few qualified non-interventionist realists working at the National Security Council staff and assistant secretary' levels of the administration. In order to re-order international politics they must partner w ith respected institutions to cultivate a cadre of future foreign policy officials who can think innovatively about US grand strategy' and challenge the foreign policy establishment’s foundational assumptions about America’s world role (Layne, 2017). This is reiterated by Walt (2018). The Charles Koch Foundation, therefore, is funding scholarships and research and training programmes at top US universities to construct a new generation to support a realist, non-interventionist strategy - offshore balancing and restraint in order to counter the liberal hegemonic establishment or The Blob’ (Layne. 2017; Parmar. 2019a). Parmar (2019a) noted that, since 2015. just five elite universities (MIT (Massachusetts Institute of Technology), Tufts, Harvard, Notre Dame, UC (University of California) San Diego) have received more than USS 13 million from the Koch Foundation. These universities are now supporting some of the most distinguished US foreign policy scholars (who are often widely cited in elite publications such as Foreign Affairs, The Atlantic and the New York Times) to add strength to the Koch Foundation-affiliated think tank, the Cato Institute’s foreign policy programme countering liberal hegemony. The Koch Foundation has declared a US$3.7 million grant to the Helfer Center for Science and International Affairs collaborative programme, the Project on Grand Strategy, Security, and Statecraft, and MIT’s Security Studies Program at the Center for International Studies in the School of Humanities, Arts, and Social Sciences. The pro¬gramme is jointly led by leading scholars. Barry' R Posen from MIT and his Harvard counterpart. Stephen Walt, who will select and mentor a new generation of foreign policy elites (Gavel, 2017). Moreover, in 2015, Koch gifted US$3.5 million to the University of Notre Dame’s International Security Center, directed by foreign policy realist Michael Desch Desch notes that people will see Koch in the same way when they think of the John M Olin Foundation and the Big 3 In May 2017 a new centre for strategic studies was set to be established at Tufts University’s Fletcher School with another US$3 million Koch grant, and another US$3.3 million was awarded to UC San Diego s Center for Peace and Security Studies in August of the same year (Rosen, 2018; Steele, 2017). Rosen further noted that lan Bremmer was approached by Koch, after publishing his book, Superpower (2016), to fund his Eurasia Group foundation with US$1.19 million for an Independent America Project’ in January 2018 regarding a more restrained foreign policy approach (Rosen, 2018).

Although the Trump administration and the Koch brothers disagree fundamentally over trade tariffs and immigration policies, they both gain far more by ‘working in concert’ for an agenda which benefits corporate elites and the wealthy (Edsall, 2018). I he Koch brothers, as \'ew York Times political correspondent Nicholas Confessore reported, spent close to USS900 million on the 2016 presidential election campaign (Confessore. 2015) In return, the Kochs gained significantly in wealth and income, especially regarding lax cuts, and the evisceration of Environmental Protection Agency regulations. The network’s main beneficiaries, in addition, include the Cato Institute, the Tea Party, the National Federation of Independent Business and groups rivalling liberal interest groups As such, despite their disagreement and distaste, a functional Trump-Koch alliance has been extremely productive, and Frump is determined to cooperate further w ith the Kochs on the domestic and foreign policy fronts to serve the interests of American elites.

More recently, it is instructive to note that Charles Koch has teamed up with the liberal financier George Soros to establish a new- anti-interventionist’ think tank¬in Washington called the Quincy Institute for Responsible Statecraft (QI) The Institute, which was launched in December 2019, promises to promote a foreign policy and security strategy based on diplomacy and restraint to end ‘endless wars’ and interventionism overseas I he QI was named for America’s eighth secretary' of state and sixth president, John Quincy Adams, who urged in an 1821 speech that the US ‘goes not abroad in search of monsters to destroy’, a statement cited on Qi’s website I he Institute argues that interventionism leads to horrific consequences, and America should set a foreign policy focusing on ‘diplomatic engagement and mil-itary restraint’ embraced by ‘like-minded progressives and conservatives’ (Quincy Institute, 2019) I he Koch Foundation and Soros’s Open Society Foundation each gifted QI US$500 000. An additional USS800 000 in donations has been received from other sources. QI aims at the funding of a further US$3.5 million budget with w hich to attract policy experts w ho w ill produce research materials for public debates (Kinzer. 2019). Qi’s five co-founders include Suzanne DiMaggio, a senior fellow at the Carnegie Endowment for International Peace; historian Stephen Wertheim; Andrew Bacevich, the conservative anti-niilitanst scholar; Trita Parsi, the founder of the National Iranian-American Council; and journalist Eli Clifton of The Nation They have all criticized American foreign policy in recent years. A foreign policy of restraint based on realism at this point suggests fewer American wars than the strat¬egy of primacy (Mearsheimer, 2018). Furthermore, big forces of history, as noted by Layne (2017), are reshaping world politics, and ‘American grand strategy eventually will have to adjust accordingly’. This is also supported by Parmar’s recent analysis (RT, 2019); the new Koch-Soros think tank appears to represent a move to readjust and recalibrate the current interventionist foreign policy into a more restrained one in order to strengthen America's international position, not to relinquish it. Nevertheless, QI represents a degree of hope for a less militaristic and war-like American posture should the new think tank’s positions be adopted by a future president.

CONCLUSION

We have endeavoured to show that American think tanks and their closely associ-ated foundations have been deeply embedded in the life of the liberal international order, and this process has been essentially characterized by their significant power-technology; the elite knowledge network The three historical and contem¬porary cases, in a Gramscian sense, reveal precisely how influential American think tanks and foundations have developed, managed, maintained and recalibrated imperial and hegemonic power since the formation of American hegemony. CFR and CH were the very symbolic sign of marking the start of the US-led liberal order and continuing America's long-term strategic goal of embracing and protecting its pan-Anglo-Saxonist thinking with elitist, racialized and imperial characteristics but under the guise of scientific spirit by scientific elites. In addition, after the Cold War ended, these core foundations and think tanks have experienced the tremendous nse and relative retreat of liberal hegemony and of DPT in practical terms. Unlike the unipolar moment immediately after Cold War containment, the US, in the current turbulent multi-polar system, has been facing threats from different directions of the world and unable to carry the burden of spreading 'global liberal peace'. The great liberal dreams have been falling into a great delusion or the hell of good inten¬tions Consequently, though not without intense struggle within the foreign policy establishment, American elites appear to be shifting away from liberal hegemony towards a restrained and less interventionist grand strategy, as indicated by the work of relatively new elite knowledge networks. The Koch Foundation and the emerging Koch-Soros axis via the new QI appear determined to strive for the maintenance and recalibration of America’s global superpower role and saving the liberal interna¬tional order or, at least, maintaining America’s leading global position. Certainly the promotion of a more diplomatically led foreign policy and a radical reduction in the US's global military footprint provides a significant new intervention in the politics of American think tanks.

### AT: Inequality Turn---2AC

#### Growth-based solutions to inequality fail and are unsustainable.

Julie Livingston 19, Silver Professor of Social and Cultural Analysis and History at New York University, “Prologue: A Planetary Parable,” Self-Devouring Growth: A Planetary Parable as Told from Southern Africa, Duke University Press, 2019, pp. 1–10

The Problem of Self-Devouring Growth

Economic growth is a paradigm that has become so second nature that when people are thinking about a place in this world and how to improve it, immediately they/we assume that growth must be the basis of that effort. Without us really noticing it, growth has become this unmarked category granted magical powers. As growth remains the common sense, the unexamined imperative, and so much is done in its name, a cascade of unseen consequences, side effects, also become second nature, a process I call self-devouring growth.

Self-devouring growth is a name for a set of material relationships. By material I mean there is something with physical properties being devoured. Growth is not inherently bad. Growth can be healthy, can be a sign of vitality. Self-devouring growth departs from these other forms by operating under an imperative— grow or die; grow or be eaten—with an implicit assumption that this growth is predicated on uninhibited consumption. The perversion happens in two linked ways: first in how the protagonists of growth envision and appropriate the resources upon which it is fed, and second in how they attend to the production of waste that is a by-product of consumption-driven growth. This particular model of growth even became a logical means of constructing healthy, robust societies, such that there is something intractable about this thinking—grow the economy, grow a business, grow a market, grow, grow, grow! is a mantra so powerful that it obscures the destruction it portends.12

In other words, self-devouring growth is a cancerous model. These are mutant forms of out-of- control growth that emerge in nodes but eventually spread into every crevice of the planetary body, harnessing its blood supply, eating through its tissue, producing rot and pain that will eventually kill the larger organism. As with cancer, we mourn each individual loss as tragic, be it Bob Marley, my Aunt Jill, the American bison, or the Guatemalan farmland now lying open as a suppurating wound after the Canadian-owned nickel mine consumed the bedrock. And yet the big picture of what is driving these losses is almost too big to take in. And so the larger dynamic of destruction is somehow accepted as the necessary cost of the good things in life.13

We pour our hopes into technological solutions. Technologies can be wonderful, but they are insufficient to save us from a problem whose roots lie deeper. Certainly electric cars are better than gasoline-powered cars. But if everyone is to have one, and if everyone is to want a new one every few years, we will still consume vast quantities of glass, aluminum, plastic, and steel, still have a problem of disposing of used tires and brake fluid, of building road capacity, of mining cobalt, nickel, lithium, and graphite to power them. The capitalism that structures the contemporary global economy is the most significant engine of this dynamic, its organizing telos, and peddler of its narcotic. Ever more intensive forms of capitalist consumption animate a system that will harm everyone, even those whose consumption mainly remains aspirational. But while self-devouring growth is the central dynamic of capitalism, it cannot be reduced to it.14 The former Soviet Union undertook its own version of self-devouring growth. So did Maoist China.

When later in this book we follow Botswana beef into a Norwegian primary school cafeteria—a Scandinavian socialist space if there ever was one—what we will find is nonetheless part of a larger system of growth-led planetary devastation that will happen long before the poor get their turn at the trough.15 Despite some of the redistributions of socialism, consumption by the elite, middle class, and aspirant grows at rates that far outstrip these leveling forces, dictating a disposition toward growth without end. The underclass—standing there on the front lines as they always must do—may get little growth but be devoured nonetheless. Sir Richard Branson, airline magnate, and his “team” rode out Hurricane Irma in the well-stocked and fortified bunker on his private Caribbean island, while people in neighboring Barbuda (perhaps home to some of his “team”) lacked such protections entirely. Recovery becomes its own growth industry. 16

Some might object, as they have since Malthus, that population growth drives the need for economic growth and so it is the poor, those chronic reproducers, who must be tamed. Yet this is a misunderstanding of how consumption, not to mention reproduction, works. Take New York City, where I live, as an example. A recent report estimated that only 2 percent of the one million buildings in my city accounted for 45 percent of the city’s energy use and attendant greenhouse gas emissions. These buildings included those where some of the wealthiest New Yorkers (Donald Trump, David Koch, Alice Walton—all climate-change deniers) reside. Meanwhile low- and middle-income New Yorkers, packed into tiny apartments and necessarily frugal about their energy use in our very expensive city, were nonetheless disproportionately exposed to the dangers of Hurricane Sandy. Over half of the victims of the storm surge were renters with average annual incomes of usd 18,000,17 well below the city median of usd 60,000. Or consider the problem in regional terms. An average citizen of the United States like myself requires more than twice the amount of bioproductive space on our finite planet to support her consumption than the average European. The European, in turn, consumes twenty times the rate of most Africans.18 While the elite consume the most and then the middle classes, these days even the poor consume at escalating rates. Yet they are sold poor-quality goods that make them ill, and are forced to reside amid the toxic detritus—the by-products and the wastelands of growth.19

Development is often posited as economic growth.20 Under its umbrella there are many projects and visions for better health, education, and well-being, but these are often subsumed by the hegemonic growth vision of development economists. Arguments are made that health, education, infrastructure, and institutional capacity will all facilitate growth. Units of analysis in turn truncate and bind relationships of distribution, such that redistribution is left a national affair at best.21 Proponents imagine growth as the way to ensure that the needs of the poor are taken care of. There is a sense that if everything grows then finally there will be enough. But this trickle-down fantasy will dry up as resource scarcity increases on our finite planet.

Meanwhile, up at the top and increasingly in the middle and even below, consumption escalates rapidly. Growth is said to bring jobs, but often it does not. Or the jobs arrive and then depart again never to return, or the jobs arrive, but they pay so little for work so numbing that they fail to be the ladders to the good life imagined by the growth proponents.22 This is certainly the case in Botswana, where the economy has grown, the population has urbanized, and yet despite persistent effort, unemployment remains intractable. Botswana has placed nets underneath her poorest citizens, who like the poor everywhere are disproportionately female; it has sought pathways for many out of the poverty that the colonial migrant labor system wrought. These are incredibly important achievements. But Botswana has been unable to employ her people adequately in an economy structured around growth. Africa’s miracle is the third most unequal country on the continent, the tenth most unequal on earth. The Gini coefficient tells as much about rampant consumption at the top, and increasingly in the middle, as it does about the poverty at the bottom. By 2015 the World Bank was cautioning that consumer spending, facilitated in large part on credit, was driving Botswana’s economy.23 The relationship between growth and personal debt is its own self-devouring paradox.

#### Only the transition can remedy inequities in human well-being.

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Four – Secrets of the Good Life,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 152-182

The elites of our world know very well what’s going on here. It would be silly to assume they don’t. They know the data on income distribution. They live by that data. They spend their lives thinking of ways to increase their share of national and global income. Their call for more growth is ultimately about speeding up the mechanisms of accumulation; the claims about the putative relationship between growth and human progress are just an alibi. Of course, they hope that growth will end up improving the incomes of the poor, and in so doing pacify social conflict. After all, elite accumulation is more politically palatable if the incomes of the poor are rising too. But this strategy cannot be sustained in an era of ecological crisis. Something has to give.

The problem with growthism is that for decades it has distracted us from the difficult politics of distribution. We have ceded our political agency to the lazy calculus of growth – the notion that growth is automatically good for everyone. The climate emergency changes this. It forces us to face up to the brutal inequalities of the global economy. It forces us into the zone of political contestation. The notion that we need aggregate growth to improve people’s lives no longer makes any sense. We need to be able to specify growth for whom, and for what ends. We must learn to ask: where does the money go? Who benefits from it? In an era of ecological breakdown, are we really content to accept an economy where nearly a quarter of total output goes into the pockets of millionaires?

Henry Wallich, a former member of the US Federal Reserve Board, once famously pointed out that ‘growth is a substitute for equality of income’. And it’s true: it is politically easier to rev up GDP and hope some of it trickles down to the poor than it is to distribute existing income more fairly. But we can flip Wallich’s logic around: if growth is a substitute for equality, then equality can be a substitute for growth.44 We live on an abundant planet. If we can find ways to share what we already have more fairly, we won’t need to plunder the Earth for more. Justice is the antidote to growth.

Those who insist that aggregate growth is necessary to improve people’s lives force us into a horrible double-bind. We are made to choose between human welfare or ecological stability – an impossible choice that nobody wants to face. But when we understand how inequality works, suddenly the choice becomes much easier: between living in a more equitable society, on the one hand, and risking ecological catastrophe on the other. Most people would have little difficulty choosing. Of course, achieving this will not be easy. It will require an enormous struggle against those who benefit so prodigiously from the status quo. And presumably this is why some are so eager that we avoid this course of action: they would prefer to sacrifice the planet in order to maintain the existing distribution of global income.

### AT: Inequality Turn---Growth Fails

#### Growth doesn’t solve poverty and degrowth doesn’t cause it.

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Frequently Asked Questions,” The Case for Degrowth, Polity Press, 2020, pp. 110-129

15) Isn’t growth needed to fight poverty?

Growth is insufficient for tackling poverty. Despite phenomenal growth in recent decades, there are 40 million poor in the US, and 11 million in the UK– 12 percent and 17 percent of the population respectively– the same share as in the 1970s. In 2008, 24 percent of people in high-income countries still lived with less than the socially acceptable minimum in their country.19 Growth is also not an effective mechanism for reducing global poverty. The poorest 60 percent of humanity receive only 5 percent of all new income generated by global growth. The fruits of growth could be distributed better, no doubt. But so could a steady, or declining output. Growth is used as the excuse to not redistribute, both because redistribution is thought to limit growth, and because growth conveys promises to improve everyone’s condition in the future. In that sense, the pursuit of growth is an obstacle to tackling poverty.

16) Isn’t growth necessary for reducing inequalities?

At a global scale, inequality among all individuals has been declining due to rises in formerly very low incomes in China and South-East Asia. However, inequalities between countries and between individuals within countries have been increasing in recent decades despite economic growth. We used to think that increasing inequalities were a feature of early industrialization, and that as a country gets richer, inequality declines. But as Thomas Piketty has shown, the mid-twentieth-century reduction in income gaps was the result not of growth, but of the destruction of wealth during the Great Depression and World War II, followed by powerful egalitarian policies in Europe and North America. Since 1980, growth has come with more, not less, inequality.20 Policy matters more than growth. Granted, tax revenue may increase with growth, allowing progressive governments to spend more for social purposes. But current taxes are much lower in the UK and the US than they were decades ago, when their economies produced a fraction of what they produce now. In contexts where growth serves as an excuse for elites to pay less, relative poverty has become a structural feature of contemporary economies, no matter how much they grow.

17) Does degrowth demand unrealistic reductions of people’s income?

It is undesirable, not to mention politically impossible, to demand a two-thirds decrease in median incomes in high-income countries in order to converge with the rest of the world. But here we have talked about decrease in resource and energy use, not directly in incomes. A two-thirds reduction in energy use is thinkable. The incomes of some people living a comfortable middle-class life may decline under degrowth, but absolute incomes don’t tell us much about quality of life. Spain’s GDP per capita in 1985 was almost half what it is now, but Spaniards’ standard of living was not noticeably worse. Spanish GDP per capita is 60 percent of the US’s (and salaries are much lower), yet those of us in Barcelona live as well as those in Florida. The purchasing power of incomes depends on cost of living, and on whether basic goods are private or public, deregulated or regulated. Three of us in Europe have access to a public health system, while Susan in the US doesn’t, so our lower European salaries are more affordable than would otherwise be the case.

#### Growth does not reduce poverty AND trades off with policy measures to solve income inequality.

Giorgos Kallis 18. ICREA professor at ICTA, Autonomous University of Barcelona. 09/2018. “The Case for Degrowth.” Degrowth, Agenda Publishing.

What about poverty? To say that growth is necessary in order to reduce poverty is a tautology, since absolute poverty is measured in GDP terms. The total number of people and the share of the world population living in absolute poverty have declined (Figure 4.7), but this “convergence” is driven mostly by China (Hickel 2017). Assuming that current relationships between GDP growth and poverty reduction continue in the future, eliminating poverty through growth requires unrealistically high increases in global output (Woodward 2015). [[FIGURE 4.7 OMITTED]] In a rich country, even the poorest of the poor may have more than $l per day. But they are still poor. Relative rather than absolute measures of poverty are important. Overall, the number of relatively poor people around the world has been increasing (Ravillon 2012; Figure 4.7). And among OECD countries, the effect of income on poverty is weak and explains little of the variation in poverty rates (Figure 4.8), which basically means that growth does not reduce poverty. [[FIGURE 4.8 OMITTED]] That growth is not universally linked to objective well-being is reasonable. Growth increases well-being if the social benefits o f growth exceed its costs. That growth has substantial costs is well established (Mishan 1967). Data on well-being, coupled with data on environmental costs discussed below, suggests that growth, at least in rich countries, has become “un-economic” (Daly 1996): the benefits of growth do not exceed its costs. Bartolini (2014) goes further than that: he argues that most recent growth is “negative growth”, meaning growth driven by expenditures compensating for growing externalities - paying for private goods, for example, that promise to protect us from the decay of resources that were once common and free. It could also well be that stagnation of well-being is instead because of an increasingly skewed distribution of income, the result of neoliberal reforms. There is (contested) evidence that the median income in wealthy countries such as the United States has stagnated since the 1970s, even though average income has grown (Stiglitz 2012). If that is so, then the problem may not be growth itself, but the uneven distribution of its fruits. There might be a link between the two, however, insofar as the pursuit of growth is used to justify regressive tax policies, austerity and a relaxation of labour rights and social protections.

#### Reducing inequality based on growth is limited and unsustainable.

Iris Borowy & Jean-Louis Aillon 17. Shanghai University, College of Liberal Arts. 08/2017. “Sustainable Health and Degrowth: Health, Health Care and Society beyond the Growth Paradigm.” Social Theory & Health, vol. 15, no. 3, pp. 346–368.

Relocalize economic life and health-related organization This demand aims at making the local community a central element in the organization of economic, political and health-related decisions. It reflects, on the one hand, the need to curtail the resource-intensive global trade, which the world can no longer afford during times of climate change. This is the focus of Daly’s proposal for a reform of international commerce according to ecological principles (2013) and of the reflexion on the concept of autonomy made by Cornelius Castoriadis (1997). But most authors raise more farreaching questions of democracy, local autonomy and community life (Latouche, 2006; Paech, 2012; Nef, 2010). These demands can be connected to long-standing concepts of community participation deriving from the primary health care model advocated by the World Health Organization since Alma-Ata (WHO, 2008). Admittedly, practical experience is ambivalent. Forty years after Alma-Ata, the record showed that, so far, ‘‘[c]ommunity participation and intersectoral engagement seem to be the weakest strands in primary health care’’ (Lawn et al, 2008). However, two factors may change the context of this concept substantially: 1. at times of rapid global communication, ‘‘local’’ may no longer have the strictly geographical meaning it had in the 1970s. Discussing Illich’s legacy in 2002, Moynihan and Smith argued that with the possibilities of the internet and broad-based discussions on medicalization, the suggestion that doctors ‘‘hand back power to patients, encourage self care and autonomy, call for better worldwide distribution of simple effective health care, resist the categorization of life’s problem as medical, promote the de-professionalisation of primary care and help decide which complex services should be available’’ was ‘‘no longer a radical agenda’’ (Moynihan and Smith, 2002). Thus, the ‘‘community’’ in community participation may have to be reconceptualized, adopting a more open and less parochial connotation. Regardless of geography, the goal is a structure of participatory and local management that would include a health system to be actively managed by citizens as a common good. Thereby, this idea ties into a reconsideration of citizen participation and democracy at large. As globalization, rising populism and the growing complexity of challenges facing modern societies are tangibly undermining societal trust in the representative democracy of the last century, there is good reason to look for alternatives in order to avoid the loss of democratic values to less benign forms of government. A number of alternative and experimental forms have sprung up in recent years, including those born of a radical opposition to existing structures like the concept of inclusive democracy, developed by Takis Fotopoulos (1997) or the more recent camps of the Indignados. A similarly radical break with conventional democracy entails the replacement of some forms of election by sortition, whereby citizens are appointed at random by a lottery organized in a way to guarantee the representation of different societal groups (Van Reybrouck, 2016).1 This method aims at increasing the integration of citizens in the process of governing their country, increasing rights as well as responsibilities. In consultative format, the idea is presently being tested with citizens’ assemblies in Ireland, established in 2016. The courage to try innovative forms of democracy would provide a richer pool of possibilities when confronting the upcoming environmental, social, economic and health challenges of the twenty-first century. Reduce inequality through redistribution Given the obscene differences of income and wealth between rich and poor in the world, a reduction of global inequality is urgently called for, both because it is morally imperative and because it is necessary to prevent unrest (and increasing numbers of migrants). Besides, there is no doubt that a reduction of poverty and socio-economic disparity would dramatically increase population health in many countries. In 2008, the WHO Commission on Social Determinants of Health singled out a fair distribution of goods and services as a central health element, declaring flatly ‘Social justice is a matter of life and death’ (Commission, 2008, iii). Health equity has since taken a prominent role in international health discussions and formed the central theme of the 2011 World Conference on Social Determinants of Health in Rio de Janeiro (WHO, 2012). Similarly, the work done by Wilkinson and Pickett (2009) and Seeman et al, (2014) indicates that, on national or local scales, relative deprivation seems at least as important as absolute poverty (Wilkinson and Pickett, 2009; Seeman et al, 2014). Recent developments towards more global equality have come with a dangerously high price. A case in point is the truly astounding rise out of poverty of an estimated 600 million people in China (Lakner and Milanovic 2013), which has been bought with an increase in domestic inequality and with immense environmental degradation. By 2006 only one percent of the Chinese urban population lived in cities which met the air quality standards in particulate matter of the European Union. Air pollution has improved somewhat since but remains critical, as does water pollution (Zheng and Kahn, 2013). Given the far-reaching repercussions of this type of development for climate change, a repetition on a global scale is inconceivable. Advocates of continued growth frequently acknowledge this fact but argue that it is possible to ‘‘grow out of’’ the burdens both of poverty and inequality, a belief that goes back to a curve suggested by future Nobel Prize laureate Simon Kuznets (1955). However, subsequent studies based on large datasets of countries have found little confirmation of the Kuznets’ inequality hypothesis, which appeared to be a function of a biased selection of very limited available data. Instead, income distribution seems to depend on regional and domestic politics rather than on overall income levels (Deininger and Squire, 1998; Palma, 2011). There is good evidence that, in the absence of strong redistributive features, economic growth inherently increases economic inequality (Piketty, 2013). A reduction of income and – eventually – wealth inequality through redistribution is a central demand of degrowth scholarship, and given the assumed limits of overall growth, more equality will require some forms of redistribution. Proposals include establishing both regulations for both minimum and maximum incomes (Daly, 2013), redistribution of money through taxation (Jackson, 2009), a public stock system and, internationally, financial transfers, equal access to global commons and easier technology transfer from North to South (nef, 2010) or less clearly defined means (Latouche, 2006). Given the centrality of (in-)equality for health, the health community should get involved in pertinent discussions. On a global scale, a beginning has been made by the People’s Health Movement. Born from widespread disillusionment with the unfulfilled promises of the 1978 AlmaAta conference, this grassroots movement formed in 2000 has since grown into a formidable organization active in over 70 countries. The demands listed in their People’s Health Charter (2000) include the replacement of growthcentred economic theories with ‘alternatives that create human and sustainable societies’ as well as far-reaching changes in global economic structures.

### AT: Inequality Turn---Policy Solves

#### Can be solved through redistribution.

Milena Büchs & Max Koch 17. Milena Büchs is Associate Professor in Sustainability, Economics and Low Carbon Transitions at the University of Leeds, UK. Max Koch is Professor of Social Policy at Lund University (School of Social Work), Sweden. 2017. Postgrowth and Wellbeing. Springer International Publishing. CrossRef, doi:10.1007/978-3-319-59903-8.

Piketty and Saez’ (ibid.) explanation for this phenomenon is that economic growth rates have declined since the 1970s, while the rate of return on capital (profits) has declined less so. If this interpretation is correct, it means that economic growth can keep inequality in check and that economic contraction is bad news for inequality. Even supporters of the postgrowth debate have stated that “no growth or low growth has a tendency to deepen social and economic inequalities” (Blewitt and Cunningham 2014: x). However, it is unclear to what extent growth is required to keep inequality levels in check. Based on modelling work, Jackson and Victor (2016) have recently argued that inequality can be limited even without growth as the impact of growth on inequality also depends on the elasticity of substitution of capital for labour (i.e. technological development), as well as different savings rates of “capitalists” and “workers” (and other types of inequalities like asset ownership). Since these dimensions are also mediated by policies, the postgrowth literature generally assumes that more redistributive policies can keep inequality in check. However, there is disagreement how they are going to be financed without growth.

### AT: Inequality Turn---AT: Overpop Impact

#### Even if growth reduces overpop, degrowth doesn’t increase it, AND the CP solves

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Frequently Asked Questions,” The Case for Degrowth, Polity Press, 2020, pp. 110-129

22) Why don’t you talk about reversing population growth?

Population growth is an outcome of growth systems that need cheap labor and consumers; with degrowth we focus on causes, not symptoms. True, there’s a strong correlation between higher GDP and lower fertility, but there is no evidence that fertility will start increasing if GDP declines. It is clear that education, health, and gender equality opportunities enjoyed by some high-income countries are being achieved by others at much lower GDPs. Empowering and defending women’s education and rights to control their bodies, implementing public policies such as pensions and public health, and promoting cultural and lifestyle changes can all slow population growth, as they have in many parts of the world.25

### AT: Inequality Turn---AT: Poor Countries

#### Growth’s more unfair to poor countries---it uses up the limited carbon and energy budget that they need to improve quality of living.

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Frequently Asked Questions,” The Case for Degrowth, Polity Press, 2020, pp. 110-129

18) Is degrowth against growth in poor countries?

Reducing Africa’s material footprint is neither necessary nor desirable. But that doesn’t mean that a Europe- or US-like growth society should be built there; people should be free to chart their own paths to wellbeing. Middle-income countries like Costa Rica achieve human development standards at a fraction of the income and resource use of rich countries.21 Poor people need clean water, public healthcare, affordable housing, and food– not generalized GDP growth that often ends up in the foreign bank accounts of local elites.

19) Do rich countries have to grow to lift the rest of the world out of poverty?

No, they don’t. On the contrary, more growth by rich countries can only worsen the conditions of poorer societies ravaged by climate change and environmental disasters caused by growth. The energy required to satisfy basic needs in poor countries will consume a substantial share of the remaining global carbon budget.22 So, high-consumption nations and people must degrow to free space for low-consumption ones. The West grew rich by exploiting the rest, so it is strange to claim now that it must keep growing out of charity in order to buy the products of the poor. Trickle down or development aid discourses make it seem as if growth in the West is helping develop the global South. Instead, high-income countries would do better to pay back some of their ecological debts, and reverse unequal capital and resource flows.

### AT: Innovation Turn---2AC

#### Degrowth doesn’t reduce innovation:

#### 1) TRANSITION SOLVES---public funding with focused investment is better than indiscriminate growth at producing innovations

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Four – Secrets of the Good Life,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 152-182

What about innovation?

There’s another powerful narrative that we need to grapple with. The dominant story holds that growth isn’t just necessary for human progress, it’s also necessary for technological progress. Most pressingly, growth is the only way to mobilise the financial resources for the energy transition, and the only way to get the innovation we need in order to make our economies more efficient.

There’s no question we need innovation to solve the climate crisis. We need better solar panels, better wind turbines, better batteries, and we need to figure out how to dismantle the global fossil fuel infrastructure and replace it with renewables. That’s a big challenge. But here’s the good news: we don’t need growth in order to do it.

First, there is no evidence to back up the assumption that aggregate growth is necessary for achieving these goals. It doesn’t make sense to grow the whole GDP and just blindly hope that it will magically end up invested in solar panel factories. If that’s how the Allies had approached the need for tanks and aircraft during the Second World War, the Nazis would be in charge of Europe right now. This kind of mobilisation requires government policy to guide and direct existing financial resources. The vast majority of major, collaborative infrastructure projects around the world have been guided by government policy and funded by public resources: sanitation systems, road systems, railway networks, public health systems, national power grids, the postal service. These are not the spontaneous outcomes of market forces, much less of abstract growth. Projects like these require public investment. Once we realise this, it becomes clear that we can fund the transition quite easily by directing existing public resources from, say, fossil fuel subsidies (which presently stand at $5.2 trillion, 6.5% of global GDP) and military expenditure ($1.8 trillion) into solar panels, batteries and wind turbines.45

Government policy can also be used to guide private investment. We know that when governments begin investing in specific sectors it ‘crowds in’ other investors who are eager to take advantage of incentives or provide necessary upstream supplies.46 On top of this, simple rules can be introduced that require large companies and rich individuals to use a share of their income (say, 5%) to buy bonds designed to fund specific projects – like a rapid rollout of renewable energy. Such measures have been used by governments many times in the past – such as during the New Deal in the United States, and during the developmentalist period in the global South – and there’s no reason we can’t do it again.

As for the process of innovation itself: it’s important to remember that many of the most important innovations of the modern era, including truly life-changing technologies we use every day, were funded not by growth-oriented firms but rather by public bodies. From plumbing to the internet, vaccines to microchips, even the technologies that make up smartphones – all of these came from publicly funded research. We don’t need aggregate growth to deliver innovation. If the objective is to achieve specific kinds of innovation, then it makes more sense to invest in those directly, or incentivise investment with targeted policy measures, rather than grow the whole economy indiscriminately and hope it will deliver the innovation we want. Is it really reasonable to grow the plastics industry, the timber industry and the advertising industry in order to get more efficient trains? Does it really make sense to grow dirty things in order to get clean things? We have to be smarter than that.

Over and over again, it turns out that the dominant belief in the necessity of growth is under-justified. Those who call for continued growth at the expense of ecological stability are ready to risk everything – literally – for the sake of something we don’t really even need.

#### 2) EMPIRICS---transition communities are innovative

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Making Changes on the Ground,” The Case for Degrowth, Polity Press, 2020, pp. 44–64

Does the case for degrowth reject technological advancements, marking a retrogression to the grueling labor of earlier times? On the contrary, we recognize the role that large-scale high-tech production will continue to play, and observe that many smaller processes, including those oriented toward purposes other than growth, are also strengthened by technological innovations.

Across Latin America, small farmers in agroecology organizations combine traditional practices with cutting-edge scientific knowledge.15 Timebankers in New Zealand use computer programs to record and calculate in-kind contributions.16 Vassilis Kostakis points to initiatives at the interface of digital and physical production, and of local manufacture and global design and distribution: L’Atelier Paysan (France) and Farmhack (US and UK) build open-source agricultural machines for small-scale farming; Wikihouse democratizes the construction of sustainable, resource-light dwellings; OpenBionics produces open-source designs for robotic and bionic devices; and the RepRap community creates replicable designs for 3D printers.17 These examples integrate recent innovations in science and engineering with longstanding modes of human organization in small-scale, decentralized, and locally controlled production arrangements that strive to minimize hierarchy and exploitation.

#### 3) SUSTAINABILITY TURNS---the growth imperative perverts innovations for welfare-reducing purposes

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

Let me be clear: technological innovation is absolutely important to the battle ahead. It is vital, in fact. We’re going to need all the innovations and efficiency improvements we can get to drastically reduce the resource and carbon intensity of our economy. But the problem we face doesn’t have to do with technology. The problem has to do with growth. Over and over again, we see that the growth imperative wipes out all the gains our best technology delivers.

We tend to think of capitalism as a system that incentivises innovation. And it does. But, paradoxically, the potential ecological benefits of innovation are constrained by the logic of capital itself. It doesn’t have to be this way. If we lived in a different kind of economy – an economy not organised around growth – our technological innovations would have an opportunity to work as we expect them to. In a post-growth economy, efficiency improvements would actually reduce our impact on the planet. And once we are liberated from the growth imperative, we will be free to focus on different kinds of innovations – innovations designed to improve human and ecological welfare, rather than innovations designed to speed up the rate of extraction and production.

### AT: Innovation Turn---No Link

#### Degrowth can coexist with innovation

Apsara Coeffic-Neou 20, DASSH program at Langara, or the Diploma in Applied Social Sciences and Humanities, “Green Growth or Degrowth: Two Opposing Paths to Environmental Sustainability,” HiPo, Vol. 3, March 2020, https://langara.ca/departments/history-latin-political-science/HiPo/Issue%20pdfs/HiPo%20Vol%203%20March%202020.pdf#page=67

There is also no reason to assume that energy efficiency and clean renewable energy cannot be pursued without a growing economy. If we can shift our measure of success away from the accumulation of wealth and power and move it toward a collective goal of improving human (and non-human) life, the predicted loss of jobs would not be an issue. Instead of a decoupling of GDP and nonrenewable natural resources, degrowth proposes a decoupling of society from capital. It is not yet clear what this would precisely look like, but that does not mean it should not be considered. Sustainable degrowth policies vary among proponents, but they include a shift toward more co-operative living, exchange systems that do not involve money, a 21-hour work week, basic income, an emphasis on local economies, redistribution of wealth, expansion of public services and taxing environmental damage.35

### AT: Innovation Turn---No Link---AT: Globalization

#### The internet solves but physical globalization doesn’t---it’s unsustainable

Ethan Goffman 20, Adjunct Professor at Montgomery College, “In the Wake of COVID-19, Is Glocalization Our Sustainability Future?,” Sustainability: Science, Practice and Policy, vol. 16, no. 1, Taylor & Francis, 12/10/2020, pp. 48–52

A team of McKinsey consultants (Pinner, Rogers, and Samandari 2020) recently argued that “addressing pandemics and climate risk requires [a] fundamental shift, from optimizing largely for the shorter-term performance of systems to ensuring equally their longer-term resiliency.” Small and local production facilities seem part of a resilient future. Technology will play a huge part. The ability to instantly move production information across continents will greatly enhance the long-predicted—but rather slow in arriving—rise of ubiquitous 3-D printing to make an array of goods, as is already happening with face shields, masks, and other emergency medical equipment (Shankland 2020). Taiwan has particularly spurred local production of medical equipment, including medical masks, hazmat suits, and drugs (Wei 2020). It seems likely that, as a reaction to the current outbreak and possible future emergencies, local production will extend to a great variety of goods. This trend, toward self sufficiency when necessary, will also provide protection from the ravages of climate change.

Moving to a new society, with local production, smaller and cleaner vehicles, greatly reduced air travel, improved public health, and myriad other changes will take global coordination. If air travel is permanently reduced, the Internet and other technology must connect us into a kind of a world brain, albeit one highly differentiated by region. Best practices will be easily shared, but local circumstances will adopt them in multiple ways. Innovation and the spread of information will occur faster than ever in human history.

### AT: Innovation Turn---AT: Space---2AC

#### Job guarantee solves.

Aaron Bastani 19, has a doctorate from the University of London, British journalist and writer, co-founded the left-wing media organisation Novara Media in 2011, “Mining the Sky: Post-Scarcity in Resources,” Fully Automated Luxury Communism: A Manifesto, Verso, 2019, pp. 117–137

There is of course one problem with Mr Jain’s thinking: ‘private investment’ is not responsible for our present level of technology, be it rockets, robotics, 3-D printing or other technologies critical to space exploration. Even now the most innovative private actor in the industry, SpaceX, remains dependent on NASA contracts to fund its research and development. What Jain wants, as we see repeatedly with the powerful, is to socialise the losses of publicly funded research and privatise the gains.

Even the wording ‘liberated through private investment’ grates, as if millionaires piggy-backing publicly funded research were acting for the greater good. Yet that is in keeping with market fundamentalism and, as Marx writes, the likes of Jain have viewed the bounty of nature as somehow the result of capitalism for centuries:

Natural elements entering as agents into production, and which cost nothing … do not enter as components of capital, but as a free gift of Nature to capital, that is, as a free gift of Nature’s productive power to labour, which, however, appears as the productiveness of capital, as all other productivity does under the capitalist mode of production.

To repurpose the phrase from capitalist realism: is it easier to imagine the end of the world than public ownership of the immense wealth beyond it? Why should it be?

For the first sixty years of space exploration, every significant breakthrough was achieved by nation-states. From von Braun’s V2 rockets to the USSR’s Sputnik and NASA’s iconic Apollo missions, private investment had no influence in any of these technological developments. As a result, there is an overwhelming case for space to indeed be the province of all. The technologies which are set to bring its abundance within reach were funded by ordinary people – not wealthy investors.

#### Sustainable space col fails

Levchenko et al. 19, Professors in the Plasma Sources and Applications Centre/Space Propulsion Centre, NIE, Nanyang Technological University, “Mars Colonization: Beyond Getting There,” Global Challenges, vol. 3, no. 1, 2019, p. 1800062

Settlement of Mars—is it a dream or a necessity? From scientific publications to public forms, there is certainly little consensus on whether colonization of Mars is necessary or even possible, with a rich diversity of opinions that range from categorical It is a necessity!20 to equally categorical Should Humans Colonize Other Planets? No.21 A strong proponent of the idea, Orwig puts forward five reasons for Mars colonization, implicitly stating that establishing a permanent colony of humans on Mars is no longer an option but a real necessity.20

Specifically, these arguments are:

Survival of humans as a species;

Exploring the potential of life on Mars to sustain humans;

Using space technology to positively contribute to our quality of life, from health to minimizing and reversing negative aspects of anthropogenic activity of humans on Earth;

Developing as a species;

Gaining political and economic leadership.

The first argument captures the essence of what most space colonization proponents feel—our ever growing environmental footprint threatens the survival of human race on Earth. Indeed, a large body of evidence points to human activity as the main cause of extinction of many species, with shrinking biodiversity and depleting resources threatening the very survival of humans on this planet. Colonization of other planets could potentially increase the probability of our survival.

While being at the core of such ambitious projects as Mars One, a self‐sustained colony of any size on Mars is hardly feasible in the foreseeable future. Indeed, sustaining even a small number of colonists would require a continuous supply of food, oxygen, water and basic materials. At this stage, it is not clear whether it would be possible to establish a system that would generate these resources locally, or whether it would at least in part rely on the delivery of these resources (or essential components necessary for their local production) from Earth. Beyond the supply of these very basic resources, it would be quite challenging if not impossible for the colonists to independently produce hi‐tech but vitally important assets such as medicines, electronics and robotics systems, or advanced materials that provide us with a decent quality of life. In this case, would their existence become little more than the jogtrot of life, as compared with the standards expected at the Earth?22

#### Neither governments nor the private sector will commit

Konrad Szocik 19, University of Information Technology and Management in Rzeszow, Department of Philosophy and Cognitive Science, “Should and Could Humans Go to Mars? Yes, but Not Now and Not in the near Future,” Futures, vol. 105, 01/01/2019, pp. 54–66

6. Public opinion

Public opinion is, at least in the near future, the main sponsor of space research and space exploration. Bertrand, Pirtle, and Tomblin, (2017) show that the public is interested in human mission to Mars. The most preferred space mission is a crew in orbit and a robot mission on Mars surface. In other words, public criteria is low risk and low cost. The German space agency follows public opinion and social interest because is focused on duty for society and oriented to social purposes as “climate change, mobility, communication and security” (Zypries, 2017). Politicians are prone to reduce space budgets or to not invest in long-term human settlement missions due to public opinion. Consequently, progress in space technology is still retarded. State of art in space transport means did not change qualitatively since the Space Race between the US and the Soviet Union. Impact of public opinion may differ in various countries. Max Grimard (2012), p. 6) shows how important is space program for public opinion in the US. Public sympathy for American presence in space is counterbalanced by the unpredictability of politician authorities, the tensions between presidents and the Congress (Grimard, 2012, p. 12), and the important role played by competition with Russia and China (Grimard, 2012, p. 6). Grimard adds that Russia is similar case but it is currently entire focused on stability of space programs, including renovation of old infrastructure than on new space exploration programs. According to Grimard (2012), p. 13), this fact excludes Russia from being the leader of international collaboration in space policy despite its historical advantages. China, according to Grimard, repeats space policies of the US and Soviet Union. By contrast, in Japan and Europe, prestige does not play role. Japan and Europe are focused on scientific and technological contexts. Space program is not a part of national policy. Due to its costs, politicians may decide to not risk negative approach of public opinion. But public opinion does not threaten private investors which can consider space as object of their investment.

7. Commercial exploration of space is not a workable alternative

Risk of funding the wall might be avoided by commercial exploration of space (Crawford, 2016). According to Crawford, some space projects such as next generation of large telescopes or crewed mission to Mars are non-profitable. While they are a governmental duty, they could be funded partially by profits from commercial exploration of space (for instance, space mining). Hope for private exploration sounds reasonable but is counterbalanced by commercial focus on profits. Because mission to Mars has only scientific profits, only public sponsors will be invested in this project. James S. J. Schwartz (2014) adds that two of the possible reasons for human space mission, such as improving human welfare and progress in scientific exploration, are well beyond interests of private companies. Newman and Williamson (2018) quite similarly expect that private space exploration will be focused on financial profits more than on environmental sustainability. Private investors are not obliged to act altruistically and to sacrifice their business for uncertain idea. W. Henry Lambright (2017) adds that private companies at least at first stages of Mars space program will not be able to fund it. For this reason, Mars space program requires multi-generational effort and political stabilization.

The challenge of safety works against private investors in space program. Public space agencies have achieved high standards of safety. They behave in careful and conservative ways. Commercial, private projects do not have the same advanced technology, the large number of scientists and support staff, and the generous budgets. Catastrophe would likely break a private space program. The lack of experience of private companies in space exploration is partially responsible for higher risk of technological failures even in relatively easy tasks as crash of Momo-2 rocket launched by Japanese start-up on 30 June 2018 several seconds after launch.

This does not mean that private investors are not able to explore space, but they are able to do that only when they receive profits. In scenario of commercial exploration of space, we should wait for some point in the future when a human space base appears as byproduct of commercial activity. A human base on Mars might be a by-product of hotels on LEO or space mining. Some investors who want to build space hotels may try to settle space regions beyond LEO and build hotels on the Moon and/or Mars. From touristic point of view, staying in the Moon or Mars hotel may be more attractive than on LEO. Investors working in asteroid mining may extend their business to the Moon and/or Mars. Both enterprises even if focused on purely commercial purposes, will not be easy (perhaps impossible) to achieve by private companies alone. Elvis (2012), p. 549) argues that asteroid mining will be challenging due to, among others, difficulties in detection of appropriate asteroids. He shows that among about 1200 analyzed meteorites only 13 of them contain high level of platinum profitable for their exploitation. Elvis suggests that NASA should reorient its strategy from focus on exploration to support for commercial utilization of space. Exploration will appear as a consequence of commercial profitable activity (Elvis, 2012, p. 549). Estimated profits of asteroid mining10 are counterbalanced by high costs of exploitation and possible decreasing of price of currently rare resources (Genta, 2014).11

#### No extinction---tech that makes colonization feasible can also solve terrestrial threats

Dr. Daniel Deudney 20, Professor of Political Science at Johns Hopkins University, BA in Political Science and Philosophy from Yale University, MPA in Science, Technology, and public Policy from George Washington University, and PhD in Political Science from Princeton University, “Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity,” Oxford University Press

However, technological advance may not unambiguously favor space expansion. Technological progress poses a feasibility-necessity paradox: as new technologies make space expansion more feasible, they may also make it less necessary. Most space-enabling technologies are moving rapidly forward to meet terrestrial needs, not to enable space expansion. To the extent space expansion is necessary to solve terrestrial problems, and to the extent technological innovations provide new terrestrial solutions, advances may undercut the need for space expansion as rapidly as they improve its feasibility.59 For example, nanotechnological advances dramatically lowering the cost of accessing Earth orbit may also undercut the need to obtain resources from asteroids. Robotics could enable cheap fabrication of orbital infrastructures but could also reduce the need for space megastructures by facilitating terrestrial wealth generation.

#### Growth imperative in space causes a universe of misery

Jordan Pearson 18, Senior Editor, Tech, “American Capitalism Is Suffocating the Endless Possibilities of Space,” Vice, 5/10/2018, https://www.vice.com/en/article/59qmva/jeff-bezos-space-capitalism-outer-space-treaty

The stars have always appeared to us effervescent with possibility, like we’re all looking up at the bubbles from the bottom of a champagne glass every night. Fiction set in outer space is not just filled with alien landscapes and creatures, but new ways of living; stargazing has always been an exercise in world-building.

The possibilities of world-building in space are what the Outer Space Treaty of 1967 represented when it was signed by over 90 countries during the first international space race. The international agreement, which is still in force today, states that space exploration “shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." It also states that signatories including the US shall be guided by the “principle of cooperation and mutual assistance.”

This treaty, clearly open to interpretation, was a springboard for efforts by developing nations to forge a new society free of Earth’s gravitational pull, and potentially free of American-led capitalism—as it turns out, both are hard to escape. A 1970s push to clarify the treaty's terms and make outer space and its resources “the common heritage of mankind” was seen in the US as an attempt to bring socialist principles into space (it was) and it was crushed. The lesson: world-building outside of the realm of science fiction is corralled—often terminally—by powerful interests.

Now, whatever possibility the Outer Space Treaty once represented for new ways of life to emerge on other planets is fading away. In late April, as The Outline noted, the US House of Representatives passed the American Space Commerce Free Enterprise Act. The Act states that its purpose is to “ensure that the United States remains the world leader in commercial space activities” and says that the US government will interpret its international obligations “in a manner that minimizes regulations and limitations” on private space companies. Moreover, it states that the government “shall not presume” that the Outer Space Treaty applies to private companies, allowing even more wiggle room.

And if there were any lingering doubt about the Act’s intent, it further states: “Outer space shall not be considered a global commons."

This declaration is a powerful form of world-building—the same kind of world-building that Cecil Rhodes, the British imperialist who founded Rhodesia and one of history’s most twisted grotesques, was doing when he sighed, “I would annex the planets if I could.” Rhodes sought to remake a whole people in the image of the white industrialist, and so it was only natural that he do the same with the heavens—if he could.

Star Trek’s collectivist Federation, sparkling and joyous Afrofuturist visions, the anarchism of Ursula K. Le Guin’s The Dispossessed—all of these possibilities seem to buckle under the weight of unshackled industry forging a society for itself and its class interests with the help of the government. If you listen to the people who stand to benefit most from the American Space Commerce Free Enterprise Act, like Amazon and Blue Origin founder Jeff Bezos, American capitalism in space will have its own benefits.

In a recent interview with Business Insider, Bezos imagined a “trillion humans” living in the solar system with “a thousand Einsteins and a thousand Mozarts.” In short, a new kind of intellectual and cultural renaissance will ring across the solar system, led by the US greenback. It sounds utopian in its own way—a thousand Mozarts?—but it belies a cruel calculus. As Buzzfeed recently pointed out, Bezos’s world-building doesn’t say that everyone will have the opportunity and ability in space to decide their own destiny, but seems to imply instead that a trillion people can prop up a cultural, intellectual, and undoubtedly economic upper class.

Bezos also said that humanity will have “unlimited, for all practical purposes, resources and solar power and so on.” This doesn't mean that everyone will have equal access to these resources, like those gleaned from asteroid mining, or that they are really unlimited. Oil is also often said by those with vested interests to be a practically unlimited resource—last month President Donald Trump tweeted that there are “record amounts of oil all over the place.” And yet untold human suffering and deprivation stems from the extraction, production, and consumption of oil and oil products, and the distribution of profits from these activities. And there is no equal access; everybody knows only those at the top can afford to use as much gas as they please on their boats, planes, and so on.

And what will life look like for the trillion humans living in the solar system, many (if not most) under the yoke of American capitalism? It will look a lot like it does now, which is to say it will be a life of work while wealth flows up to an interstellar elite.

And if this vision expands beyond our solar system? Trillions of humans; one thousand gray planets, one thousand petty plutocracies, a universe of misery.

#### That outweighs

Marko Kovic 21, co-founder president of the nonprofit think tank ZIPAR (Zurich Institute of Public Affairs Research) and the co-founder and CEO of the consulting firm ars cognitionis, “Risks of Space Colonization,” Futures, vol. 126, 02/01/2021, p. 102638

4 Aberration risks

Aberration risks are risks inadvertently created by space colonization. They are entirely new risks without precedents in human history, and they expand the moral circle of concern (far) beyond humankind. The disvalue that they can create is potentially orders of magnitude greater than the positive value of humankind's future. Figure 4 is a summary of the speci c aberration risks that I focus on.

Table

Description automatically generated

I discuss four specific aberration risks in the subsections that follow; all four of them are existential in nature.

4.1 Unhappy future generations

The moral impetus of colonizing space is to increase the probability that all the potential future humans that could live do come into existence. But we do not only want future generations to exist but to live lives that are actually worth living. However, the moral landscape of the far future might turn out to be much blurrier.

Imagine, for example, a scenario in which 10 billion people live on Earth, and another 2 billion people live on a terraformed Venus. The people on Earth are living roughly as good lives as we are today, but the Venusians are all categorically suffering: Because the terraforming was not entirely successful, some of the original toxic Venusian atmosphere remained, leading to mild respiratory issues in most of the population. Is this state of affairs preferable to there not being any Venusians at all? On the face of it, yes. After all, the total total wellbeing of humankind is much greater with the 2 billion Venusians than without them. Mild respiratory issues in 2 billion people are a nontrivial amount of disvalue, but their existence still seems preferable to their non-existence.

Let us imagine a second scenario. There are 10 billion people on Earh living lives that are roughly as good as the lives we are currently living, there are 2 billion people on Venus with chronic respiratory issues, and there are 500 million people on Mars. Unfortunately, given Mars' inexistent atmosphere and magnetosphere, cosmic radiation is battering the surface, including human habitats. This has lead to permanent damage in the Martians' DNA, resulting in chronic muscular and skeletal disease. As a result, the whole Martian population is collectively suffering from a hereditary and incurable congenital disease. Is this scenario preferable to there being no Mars colony or to there being no colonization at all? On the face of it, the answer is again yes: Even though the lives of the Martians are much less pleasant than the lives of the Earthlings and the Venusians, the Martians are still living lives that are worth living to them. The total amount of wellbeing and happiness of humankind is greater than if there were no Martians at all.

In these hypothetical scenarios, we are confronted with two classic problems from population ethics: The so-called repugnant conclusion [28] and the non-identity problem [29]. The repugnant conclusion is the observation that our intuitive judgement of moral desirability, the increase of total happiness or welfare, is flawed. In our second scenario, the Martians are living fairly terrible lives that might barely be worth living because they are full of suffering. Just because the total amount of happiness or welfare is greater with the Martians than without them does not mean that a world with the chronically suffering Martians is morally desirable. The repugnant conclusion is relevant in the context of space colonization both because of its existential scope as well as its empirical plausiblity. Creating habitats that are able to permanently sustain human life is an immense technological challenge, and it is not unrealistic to expect that life beyond Earth will be miserable for quite some time.

The non-identity problem is the observation that something is wrong with another common moral intuition. Our Martians live miserable lives, but from their own subjective point of view, that reality is preferable to the alternative of not existing at all. In a sense, no matter how terrible life for the Martians is, no moral harm seems to be done because no person was actively harmed by there being Martians | the Martians are not su ering because someone actively and malevolently hurt them or made them sick; they simply come into existence in their frail, sickly state. This means that if a Martian could choose between existing the way she does and not existing at all, she would almost certainly pick the former. But something is wrong with this conclusion. The Martians are living lives full of suffering, and clearly, this state of affairs is morally undesirable.

The concrete problems within scenarios in which the repugnant conclusion and the non-identity problem apply can be described in several ways. For example, if we put moral emphasis on average wellbeing rather than just total wellbeing, we see that the growth of total wellbeing can go hand in hand with a decrease of average wellbeing. This would indicate that something has gone wrong. However, average wellbeing alone might not be a good enough indicator. For example, in an Omelas-like con guration [30], it is conceivable that average wellbeing would increase while a small subset of people endure hellish su ering. That is why another approach to understand these problems of population ethics is to not only focus on happiness and wellbeing, but also on the negative side of the utilitarian coin, su ering: If some situation or decision produces a disproportionate amount of suffering compared to wellbeing, that situation is undesirable6.

The repugnant conclusion and the non-identity problem are examples of how many billions of future humans could live considerably worse lives than we do today. That would constitute a moral failure on an existential or nearexistential level | humankind would still exist, but the primary result of our expansion beyond Earth would be a gradual erosion of happiness and a gradual accumulation of suffering.

### AT: Innovation Turn---AT: Space---Framing

#### Fatal barriers to space industry are ignored because frames that treat social relations as immutable make leaving the planet appear to be the only option.

Ryan Gunderson et al. 21, Ryan Gunderson is with the Department of Sociology and Gerontology; Diana Stuart is with the School of Earth Sciences and Sustainability, Program in Sustainable Communities; Brian Petersen is with the Department of Geography, Planning and Recreation, Northern Arizona University, “In Search of Plan(et) B: Irrational Rationality, Capitalist Realism, and Space Colonization,” Futures, vol. 134, 12/01/2021, p. 102857

4. The case for space colonization: irrational rationality and capitalist realism

We now apply the concepts of irrational rationality and capitalist realism to sociologically examine the case for space colonization as a means to save humanity from escalating existential threats on Earth. By “sociologically examine,” we mean seeking to understand justifications for space colonization in specific historical conditions. For example, the social conditions that drive climate change also condition the case for space colonization as a post-catastrophe survival strategy.

We first explore the rationality of justifications for moving off-planet, and if space colonization is indeed more likely to save human lives than other approaches to solving social problems on Earth. We then illustrate how justifications for space colonization prioritize increasing profits and economic growth (cf. Jackson, 2021) and, more broadly, the case for space colonization does not consider Earth-bound social alternatives to capitalism.

4.1. The irrational rationality of space colonization

While there are incredible challenges that could potentially limit visions of space colonization, our focus is to examine if space colonization is rational in terms of preserving the human species from the escalating existential threats on Earth. From what we know, does space colonization represent an effective and efficient way to protect the human species? How rational are the justifications for space colonization to save the human species on their own instrumental grounds? We argue the following: (1) that alternatives to Earth are obviously far more inhospitable for human life than Earth and, thus, preserving Earth is more instrumentally rational; (2) if the goal of space colonization is to preserve the human species, then it is more instrumentally rational to save many more lives on Earth than create space colonies for a small population who can afford the ticket; and, most importantly, (3) there is reason to predict that humans would take an irrational rational logic with them to space, the same rationality that oversaw the destruction of Earth and brought them off-planet in the first place. The point is to develop an immanent critique of the instrumental case for space colonization to show the extent to which this form of logic is still unreasonable, even judged by its own means-oriented criteria.

While space colonization is justified to avoid risks and threats on Earth, there will be new risks and threats in space – some that are even more severe. Kovic (2020) discusses some of these risks and in certain scenarios the risks of space travel and colonization greatly outweigh the risks of staying on Earth and the benefits of colonizing space. Kovic (2020): 3) explains,

[i]n general, there are two ways in which space colonization-related risks might affect the long-term future of humankind. First, humankind might become more susceptible to existing (existential) risks. Second, space colonization itself might create new (existential) risks that could result in highly undesirable or even catastrophic outcomes.

Kovic (2020) in the end argues that prioritizing space colonization as a survival strategy overlooks or ignores the high probability of existential threats and risks in space. The rapid creation of new technologies for space living may also create unexpected consequences and risks that could undermine or threaten space colonization. For example, on Mars, hostile conditions including dust storms, sub-freezing night time temperatures, and lack of water or carbon-dioxide to grow plants (Szocik, Wójtowicz, Rappaport, & Corbally, 2020) could result in death, starvation, cannibalism and extremely stressful survival decisions causing “astronomical amounts” of suffering (Torres, 2018: 75).

In addition, the space colonies currently proposed still would not protect humans from large-scale stellular events like supernovae or an expansion of the sun. As explained by Stoner (2017) in the context of a Mars colony, the same risks as well as new risks make the colony very dangerous and protective measures would be immensely expensive in a cost-benefit analysis:

[i]f the goal is species survival, and given that the Martian environment is much less survivable than even a post-strike Earth would be, then there is no remotely realistic budget point at which the marginal dollar would be more effectively spent on Mars colonization than on protecting Earth and the creatures and civilizations that evolved to live within its shelters.

Stoner (2017) goes on to argue that the analysis for the operations of projects like those of SpaceX, “only appears rational because they have carefully loaded the comparison scenarios in a way that guarantees a pro-colonization conclusion.” While space colonization may be a better preservation strategy than doing nothing, there are many more options that are less risky and more likely to preserve a greater number of human lives.

Another commonly overlooked aspect of space colonization as a species survival strategy is the fact that not everyone will be able to go, and many of Earth’s commoners and poor will likely be left on Earth. Only a portion of the human population would be able to live off-planet, perhaps only the economic elite. It is not unreasonable to assume that, if there are large inequalities in power and wealth, that the most wealthy will be in power and that these elites will decide to be the “lucky” few space settlers. It is not possible for Mars, for example, to provide a safe habitat for all humans on Earth. Thus, a possible scenario is economic elites leaving behind the vast majority of humans on an inhospitable Earth. As Billings (2019: 45) questions,

“how many poverty-stricken Bangladeshis, how many sub-Saharan Africans, how many permanently displaced Syrian refugees, how many disabled and unemployable workers could come up with $200,000 – or $2,000,000 for that matter – to move to another planet and start a new life. What are the ethics of giving the rich yet another advantage over the poor? What are the ethics of ignoring the need to check the rapid pace of climate change on our own planet?”

Under capitalism, any solution to crises on Earth focused on moving off-planet will likely exclude the masses and the poor. Are these lives not worth saving? Are there other strategies that would save more lives?

Saving the most present and future human lives would require addressing the threats on Earth, including climate change, biodiversity loss, poverty, disease, and famine. As stated by Kovic (2020: 6), “[g]iven these acute problems, pursuing space colonization today could be a misguided use of limited resources.” He poses the following question: If the goal is to save as many lives and to maximize overall wellbeing, then why focus on an alternative that only benefits a very small population, while the vast majority struggle to survive or perish? Others argue that much more than human lives need to be saved to live successfully off-planet; we need a diversity of other organisms and a measurable portion of the Earth’s biodiversity (Johnson, 2019). Given the rate of existential threats like climate change, how much time is there to develop this technology and transport all people and enough other organisms off-planet? If the goal is species survival, the time (and the immense resources required) could be spent in more effective ways to benefit all people and species. However, these alternatives are unseen or considered impossible in the context of capitalist realism (see proceeding section).

### AT: Innovation Turn---AT: Space---Col Fails

#### Colonization fails---dozens of reasons

Dr. Daniel Deudney 20, Professor of Political Science at Johns Hopkins University, BA in Political Science and Philosophy from Yale University, MPA in Science, Technology, and public Policy from George Washington University, and PhD in Political Science from Princeton University, “Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity,” Oxford University Press

Based on the earlier analysis of technological feasibility, the solar expansion success scenario is probably possible, with critical uncertainties about health and artificial biospheres. But this scenario is also very improbable for many strong reasons. Inaction, failure, or debilitating conflict are more likely than success. Colonization may not be attempted because it is too difficult and expensive, or because of growing Earth problems and troubles. Off-Earth living could be too unhealthy for humans, and reproduction and child growth in low-gravity environments may be infeasible, confining viable habitat to spinable artificial bodies. Potent pathogens might evolve in novel space environments. Artificial ecosystems could be too difficult to create and sustain. People may not want to live on Mars or an asteroid, for the same reasons they do not live in the middle of the Sahara or Antarctica. Or colonization might be attempted and quickly fail, like Norse Vineland in Newfoundland or Scot Darien in Panama. Or a colony might be only minimally successful and linger as a remote, climate-stunted backwater, like early modern Iceland. Space colonies might be like the many failed societies analyzed by the geographer Jared Diamond in Collapse.6 The small population of a space settlement might succumb to disease or debilitating internecine conflict. Conflicts over the limited number of metal-bearing asteroids might start early.7 The sponsoring Earth agent might abandon its colony due to shifting priorities, insufficient resources, or diverting conflicts. If interstate rivalry propels colonization it will happen more rapidly but will also be more likely to involve violence sooner. If rivalrous states establish colonies, conflict between them might beggar and hobble all. There may be a vast gap between a colony that can be kept operational with continual inputs from Earth and one that is capable of persisting without any Earth support. If, as Sagan proposed, large-scale settlement is delayed until after major terrestrial problems have been solved, the prospects for success rise, while the rationales weaken and the time frames lengthen. And as colonization becomes imminent, doubts of the sort voiced here may lead to organized opposition.

The success scenario, and much of space expansionist thinking, operates with the implicit assumption that space settlement will be propelled by numerous capable agents committed to advancing the long-term success of humanity. This is a dubious assumption, given that the Earth’s growing problems have yet to stimulate the emergence of numerous powerful agents committed to advancing even the species’ short-term success. And if powerful actors were motivated by long-term species interest, colonization would be much less necessary.

The success scenario also operates with what can be called the Benign Parent Model of Terra-Colony Relations. In this approach, Earth lavishes resources on its space colonial offspring and benignly supervises their development until they are able to direct and support themselves. Constitutions for space polities embodying the best of Terran political wisdom are established. This model, however, is almost entirely at variance with the historical experience of terrestrial colonization and the incentives of relevant self-interested actors. To the extent states or corporations invest in space colonies, they will want to maintain control and reap the benefits of their investments. To the extent they anticipate colonial independence, they will not invest; if they do, they will try to keep colonies small and dependent.

The success scenario also assumes that different space ventures build on each other when they might subvert and impede one another. The two central projects, Mars colonization and asteroidal resource extraction, might be quite antagonistic. Wealth generated from space resources will most probably be repatriated to Earth, not plowed into space habitat construction. Asteroidal exploitation is likely to be capital- and robot-intensive, with a minimal human labor force rotating through small off-world bases, as on off-shore oil rigs. If resources from asteroids are the bonanza some anticipate, the beneficiaries of this wealth will not want colonies to contest their access and possession and can be expected to actively oppose colonization. The more space mining benefits terrestrial actors, the greater their incentive to impede space settlements. And once the bombardment potential of asteroidal orbital alteration technology becomes obvious, the dangers of independent space colonies might be sufficiently obvious to thwart their realization.

A long list of powerful barriers stand between colonization visions and accomplishment. Given the many obstacles that render successful space colonization at scale very improbable, it is extremely imprudent for humanity to view space colonization as a hedge against catastrophe or extinction. With low probabilities of success and significant moral hazards and opportunity costs, space colonization should not be considered a viable response to severe Earth problems and troubles.

#### Any colony would be dependent on earth for resources---human society is too complex to survive without support.

Adam Morton 18, Visiting Emeritus Professor of Philosophy at the University of British Columbia, “Three: Problems with Colonies,” Should We Colonize Other Planets, Polity Press, 2018, pp. 30–39

Worries about refuges

To be refuges where humans can survive catastrophe on Earth, colonies on other planets must of course contain and sustain humans. That is the point. They must also be highly technological: surviving in an environment less hospitable than anywhere on Earth would need powerful resources. Mars does not have an atmosphere that we can breathe, does not support plants that we can eat, is very cold, has little usable water, and receives much less solar energy. It is hard to make an analogy with anywhere on Earth: combine the light levels of the deep ocean with the cold of the Antarctic, add radiation, and then exaggerate. (The pictures from the Martian Rovers are accurate as far as colour and illumination go, but we tend to project familiarity onto them, taking the atmosphere to be like air on Earth and reading the absence of snow and ice as warmth rather than the frozen desert that it really is. I know this is my own tendency until I catch myself.)

The colony must from early on produce all its own food, water, and oxygen. This is not at all impossible, given sophisticated equipment, which has been tried out under desert and arctic conditions on Earth. But these conditions are not really that much like Mars, especially with respect to cold, dark, and radiation. The equipment must continue to function, indefinitely. So it must be possible to repair it without using supplies brought from Earth. So, until local manufacturing can take over, repair equipment and spare parts must be added to the list of things that must be sent with the colonists in the first place. And, easy to overlook, it adds to the number of people who must be sent. A modern technological society of a kind that can create and repair the kind of equipment we are talking about involves thousands of specialized skills. Some combinations of these can be compressed into a smaller number of people, but many are still needed. Robinson Crusoe would not last long on Mars.

Questions about the number of people in a colony are crucial. Self-sufficiency requires a large number of people – say several hundred at the least. And long-term survival requires genetic diversity. If population sizes are too small, then inbreeding makes hereditary defects and infectious diseases more common. Moreover, with a small population size, random fluctuations can result in imbalanced numbers of males and females, leading to both a smaller number in the following generation and yet more reduced diversity. (A shortage of females is obviously more serious. A bias towards females would have obvious advantages. Perhaps in fact an ideal colony should be all female plus a genetically diverse sperm bank.) It has been estimated that in wild quadrupeds a population size of 500 to 1,000 is needed for long-term survival of a species, while the crews for the simulated Mars habitats on Earth have typically had six people! Humans already have a very low genetic diversity: pairs of chimpanzees in the same troops have on average more genetic diversity than pairs of humans on Earth.

The crews would have to be carefully chosen. A very special psychological makeup is needed. Crew members must endure close quarters with a small number of others, a very basic life, the knowledge that one has left one's family and friends behind, and a high risk of death. They must also be chosen so that there is a range of technical knowledge, improvisational skills, and the emotional and cultural makeup needed for something like Earth civilization to continue. And this must reproduce itself for generations. It is unlikely that, even if an optimum mix of people were achieved in the initial crew, the same mix would be preserved in subsequent generations. This too argues for larger population sizes. But the more people there are, the greater the expense and resources needed to establish the colony in the first place.

A disturbing fact about the production of food on Mars has recently emerged. The soil on Mars is rich in compounds called perchlorates. They react with ultraviolet light, to which the Martian atmosphere is largely transparent, in a way that is fatal to many cells. There is thus a lot of doubt whether plant crops, and the symbiotic bacteria that many of them need, can survive in Martian soil. This complicates ambitions for indoor farming considerably. Because of the effects on both living cells and human health, perchlorate contamination is regarded as pollution on Earth. Perchlorates also have a risk of explosion when they are heated, complicating plans to produce oxygen by heating the Martian soil. They are, however, a source of oxygen and of other basic chemicals; although dangerous they could have their uses. There are surely high-tech solutions to this problem, but equally surely they raise the stakes for transport and technology and increase the danger.

The complexity of technological society

There is a fundamental fact behind many of these problems: the large scale and interdependence of our society, with its complex web of manufacturing techniques and expertise held in the minds of many people. It is extremely hard to duplicate this in a small population with restricted resources, especially in a hostile and unfamiliar environment. So dependence on the mother culture is hard to avoid. (This was true in the past, also. The early European colonies in North America did not make their own muskets until they had grown quite large, and European agricultural styles took a lot of adapting. This may not seem advanced technology. But could you make a musket? For that matter, could you make a stone axe?) This means that the high-tech devices needed to survive in the Martian environment are not going to be designed there. The designs are going to come from home. And it is likely that at least a proportion of the devices themselves will also. 3D printing from transmitted designs may solve some problems, though, if the raw materials can be obtained and refined on Mars. (I would imagine that supplies of direct and indirect biological material, such as the petroleum and oil products that are used to make plastics, might pose a serious problem.) If imported equipment is unsuitable or does not work because of some unexpected quirk of the faraway environment, much of it will have to be redesigned and manufactured not where it is needed but where the techniques and expertise are to be found. The more advanced the apparatus (the higher the tech), the more will need to be transported to the colony, adding to the transport costs and creating a need for spares.

For all these reasons I am extremely sceptical that a colony of the size that we could send to Mars in the next decades, perhaps in the next century, could sustain itself without frequent supplies and reinforcements from Earth. The obvious reply to this is to drop the requirement that the colony be able to survive without the supplies and reinforcements. But this would undercut one of the main purposes – that of providing a remnant of humanity on Mars with a reasonable chance of surviving an earthly catastrophe. The colony would then be a scientific expedition and the beginning of a preparatory project that might take centuries.

#### AND, more reasons:

#### 1. Reproduction impossible.

Steven Lerner 18, Staff writer @ Tech Times, "Having Sex On Mars Could Be Challenging And It Might Lead To A New Species," Tech Times, 5/31/2018, https://www.techtimes.com/articles/229073/20180531/having-sex-on-mars-could-be-challenging-and-it-might-lead-to-a-new-species.htm

"Unfortunately, such an endeavour comes with titanic challenges in various disciplines, from space travel technology to medical, biological, social and ethical challenges," the researchers wrote. "We assume that human reproduction in a Mars settlement will be necessary for the long-term success of an outer-space mission."

The researchers hypothesized that if humans were to successfully conceive and give birth in space, it could potentially be a new species because of all of the unique circumstances outside of Earth.

Challenges Of Reproducing On Mars

Although the researchers are optimistic about reproducing on Mars, there could be numerous challenges that might make sex nearly impossible.

The biggest challenge is with the gravity. Mars has roughly one-third the gravity of Earth, which could endanger the likelihood of getting pregnant. It is well-documented that prolonged time in space could alter a human's biological makeup and it could change the shape of a person's brain. This is how a new species might get created.

Lower gravity could lower a person's blood pressure, which is needed for engaging in sexual intercourse. Scientists also know that low gravity can cause vision problems and lead to a weakened immune system, which would be dangerous for pregnant women.

In addition to the lack of gravity, there are also other complications. There is more solar radiation on Mars, which would reduce a man's sperm count. More importantly, there is no documented evidence that a woman could have a full term pregnancy without any problems.

The researchers wrote that these challenges could increase "the risks of infection-induced abortions and facilitate the dissemination of diseases among pregnant and non-pregnant individuals."

#### 2. Laundry list.

Sukant Khurana 18, runs an academic research lab and several tech companies, "The prospect of escaping earth due to depletion of resources," Medium, 6/2/2018, https://medium.com/@sukantkhurana/the-prospect-of-escaping-earth-due-to-depletion-of-resources-e5bc92d477f0

Atmosphere

Creating a breathable atmosphere is one of the first conditions of building a space settlement. Most of the planets such as Mars (95.2% CO2 and only 0.13% O2 ) [3] possesses a hostile atmosphere for human habitation. Also, the atmospheric pressure is way lower than Earth (At mean radius, Mars has an average atmospheric pressure of 0.058 psi-0.126 psi [3] where on Earth, the mean pressure at sea level is 14.6959 psi ) in most of them.

The other concern related to the atmosphere is the freezing cold temperatures in our prospective colonies. Most of them do not have a proper atmosphere to contain the solar energy and some are simply far from the sun. The Martian temperature can reach anything between -60 to -65 degree Celsius [4] and this figure simply go down as we move further from the Sun.

Health concerns

Another big issue for us can be the difference in gravity in our prospective home. Mars for an example has a surface gravity of 3.69 m/s2 [3], only 37.9 % of Earth’s surface gravity. Such low gravity can have serious effects on the colonists. It may cause osteoporosis and cardiovascular diseases and can even lead to significant decrease of grey matter volume in our brain [5].

Radiation is another threat for a budding colony outside Earth. Planets or moons which do not have a magnetic shield like Earth, can expose the colonists to harmful radiations. Such exposers can lead to serious cognitive disabilities and may affect the fertility of the colonists. Other serious consequences include cardiovascular damages and cancer. For a Mars Mission, the standard risk of exposure induced death in astronauts can jump from 3% to 10% while the chance of morbidity becomes as high as 20% [6].

Severe psychological issues may also develop among the colonist thanks to the isolation they may experience in the early days of the colony. An interesting read in this regard is the article on the mental preparation for mars by Sadie E. Dingfelder.

Economical Feasibility

To set up a space colony we require a huge initial investment to cover the expenses to set up such a facility millions of miles away. Given the costs of a traditional launch and the amount of payload we need to transfer, it is almost impossible for a government to fund such an attempt without breaking the bank. A hope in this regard can be the recent developments of low-cost crafts such as the SpaceX Falcon 9 but they are still far from what is required to sustain such an ambitious effort.

Conclusion

From what we have discussed so far, it is clear that even if space colonization can be a solution for the survival of humankind, we are still far away from making it possible due to several factors. Hopefully, with the brilliant minds working in this sector, the day is not far when we will be harness to harness such technologies that will make our voyage towards our new home safer and cheaper. Till then, all we can do it is to try our best to protect and manage our resources so that the future generations can have a better place to live in.

#### 3. Tech failures AND cancellation.

Konrad Szocik 19, University of Information Technology and Management in Rzeszow, Department of Philosophy and Cognitive Science, “Should and Could Humans Go to Mars? Yes, but Not Now and Not in the near Future,” Futures, vol. 105, 01/01/2019, pp. 54–66

10. The paradox of technological progress in regard to interplanetary human missions

Perhaps history of humanity does not offer strong and many examples of global collaboration but it is full of examples of original innovations and dynamical technological progress. For this reason, it seems reasonable to think that even if current state of art in space technology makes human interplanetary missions impossible, it will enable them in the future. More challenging than effective rockets for the journey to Mars is the return journey to Earth, and also creating a safe and relatively comfortable habitat on Mars. Mission planners need new solutions to current space technology. The basic challenge is the time of such a journey that’s calculated to be at least 5–6 months. An ethical problem arises here if the mission involves many months of travel in unpredictable conditions and harmful environment.

But the challenge is bigger than in previous technological gaps in human history of space exploration. NASA does not possess the technology needed to organize a safe human mission to Mars.

Another challenge is Mars gravity greater than the Moon’s gravity. Landing on Mars and coming back will be more challenging than in Apollo lunar program (Weintraub, 2018, pp. 6–7).

Another issue is the large distances in space between possible destinations that are theoretically available for human capacities. The challenge is not to connect New Zealand and Qatar (less than 15,000 km). The challenge is to connect Earth and Mars (around 55,000,000 km in perihelion). Forgetting for a moment about enormous challenges waiting for astronauts after landing on Mars surface and their fight for survival, the journey to Mars is challenging because Mars gravitation is such that Mars astronauts probably will have to land autonomously, without real time ground control support as in case of analogical operations currently conducted by NASA and Roskosmos). Technological challenge for a human mission to Mars is complex, and what has been mentioned so far is only prelude to the challenges of living on Mars surface. The basic problem that distinguishes mission to Mars from missions to the Moon is that astronauts who land on Mars probably will not be able to come back Earth after a stay of only a few days. One issue is deleterious impact of long journey on their physical and psychological health, and paradoxically, Mars habitat is not the best place for recovering after such exhaustive journey. Because human mission to Mars will be a big effort – both in terms of preparation of the mission on Earth and then the long journey to Mars –we can expect that mission planners and organizers, and public opinion may expect a relatively long stay on Mars. This is obviously a bigger challenge than a one-way spacecraft trip to Mars.

The current state of the art in space technology makes a successful mission to Mars impossible both now and in the near future. There is no analog of a long-term Mars mission in any previous and current human space programs. Apollo program did not include long staying of astronauts in habitats on the Moon, and the journey to the Moon is substantially shorter than journey to Mars. The full time of Apollo 11 mission in 1969 was 8 days including journey to the Moon, staying there almost one day, and return journey to Earth. This is important in case an emergency because both during the stay on the Moon base or during flight problem. The good illustration of the latter case is Apollo 13 mission in 1970. Something like “in case of emergency” does not exist in human mission to Mars. Mars crew cannot count on real time ground mission control support due to communication delay. An evacuation mission or rescue mission will be impossible, at least in the first years of Mars space program. Even if the next rescue spacecraft could be sent from Earth – if it was feasible technologically and economically – its 6–9 months journey to Mars could be too long to offer help for Mars astronauts in need. The model of astronauts who stayed at the ISS for more than one year non-stop should not be treated as equivalent of future Mars astronauts staying on Mars. ISS is not a good analog for Mars habitat for many reasons. Astronauts who stay at ISS are able to leave the ISS in a couple of hours. There are also some basic differences caused by distance and by exposure to cosmic rays that undercut analogies between a human mission to ISS, to the Moon and a mission to Mars. For these reasons, Borowitz and Battat (2016) argue that cis-lunar habitat space missions should be the next target for collaborative effort of spacefaring states in their route to Mars.

These basic challenges appropriate for human mission to Mars shows how fragile and risky is human factor in a mission to Mars (Szocik, 2019). The unique receipt for successful space exploration is to develop and to invest in robotic, without a human crews space missions.

The risk of catastrophic failure also cannot be excluded. In the briefly mentioned human progress in building and testing aircrafts, there is obvious correlation between failures and advance in flight technology. It seems that this progress would not be possible without failures. Failures are impossible to avoid because some challenges and risk factors were impossible to predict and to test before they happened. Some limitations appear only during flights. Aircraft accidents often led to changes in technological solutions, training procedures, and flight control rules. Something similar may be expected in regard to human mission to Mars. Some failures (Apollo 13) or even lethal catastrophes (NASA space shuttles in 1986 and 2003) show that risk of failure is relatively high. During a mission to Mars, this risk increases due to the long journey and the delay in communication between astronauts and mission control on the ground. NASA fatal accidents in 1986 and 2003 attracted media interest and led to the cancellation of the human spaceflight program, but here cultural differences may be important. Chinese Xichang space disaster in 1996 did not cancel Chinese space programs (Szocik, Wójtowicz et al., in press b). The question of safety and the risk of failure is especially challenging for private initiatives when because accidents may result in canceling the entire program (Genta, 2014).

### AT: Innovation Turn---AT: Space---Space Growth Bad

#### Growth defects will destroy space projects

Ryan Gunderson et al. 21, Ryan Gunderson is with the Department of Sociology and Gerontology; Diana Stuart is with the School of Earth Sciences and Sustainability, Program in Sustainable Communities; Brian Petersen is with the Department of Geography, Planning and Recreation, Northern Arizona University, “In Search of Plan(et) B: Irrational Rationality, Capitalist Realism, and Space Colonization,” Futures, vol. 134, 12/01/2021, p. 102857

Lastly, the current social order dominating human-human and human-material relations (capitalism) is likely to result in negative outcomes and problems even off-planet. For example, mining and development on Mars would very likely be environmentally destructive as colonization is unlikely to have a light impact on the planet (Stoner, 2017). We would bring these relations and the associated problems with us. As Marino (2019: 15) explains,

[i]n Musk’s view we need a back-up planet. But he doesn’t acknowledge that we ourselves are the cause of this dire situation. And therein lies the problem and the reason we, as a species, have no business trying to colonize another planet. Musk’s reason for wanting to colonize Mars is to save ourselves from ourselves and it is self-evident that this alone recommends we should not be going anywhere.

There is no reason to assume that we have learned our lesson on Earth and will create a new civilization with better outcomes, when the same system and drivers (namely, capital accumulation) continue to dominate the social order.

Billings (2019) reminds us that while one may wish to “start fresh” in a new colony, humans will take the drivers of crises and collapse with them. These drivers and forms of logic are precisely why humans find themselves discussing the possibility of moving off-planet in the first place. This fact should inspire collective reflection and deliberative discussions on the purpose of life and alternative ways of organizing social relations to achieve this purpose. However, for irrational rationality, the latter substantive questions answered through communicative action are an irrelevant waste of time - at best, “mere opinion.” In contrast, the ostensibly “practical” and “realistic” technological rationality responds by designing ever-more sophisticated technics for the irrationally rational purpose of rushing off to space to continue the instrumental crusade of blind domination. This is the elevation of means to ends, the irony of contemporary instrumental reason diagnosed by the Frankfurt School. Rather than serving a better world, technological development and production today are ends to be pursued for their own sake. That is, because we can no longer set aims through reasonable criteria, we pursue aims, such as economic growth and technological development, that are set by a semi-autonomous economic system. For the Frankfurt School, these are irrational conditions because technology and economic activity should be instruments to serve humanity, rather than humanity serving technology and economic activity.

In summary, the associated risks, inequities, and costs do not support the argument that space colonization is an effective and efficient strategy to preserve the species from existential threats on Earth. The polemical point here is to highlight how the heights of instrumental rationality—hi-tech plans to colonize space to ensure species survival—are irrational because the case for space colonization: (1) fails to make a convincing instrumental case on its own grounds (i.e., space colonization is not an efficient and effective means to safeguard the species) and, (2) by elevating means (namely economic activity) to ends, exhibits the same kind of logic that caused the Earth-bound problems that space colonization is responding to. The inversion of means and ends is examined further in the context of capitalist realism.

#### Turns case---if we destroyed the Earth we will destroy outer space

Linda Billings 19, consultant to NASA's Astrobiology Program and Planetary Defense Coordination Office, “Colonizing Other Planets Is a Bad Idea,” Futures, vol. 110, 06/01/2019, pp. 44–46

2. The ideology of conquest and exploitation

Examining the history of the U.S. space program reveals an underlying ideology of space exploration that has at its core a rationale for conquest and exploitation. This ideology is deeply rooted in a durable American cultural narrative of frontier pioneering, free enterprise, rugged individualism, and a right to life without limits.5 It is a pastiche of many ideologies, drawing on American exceptionalism, neoliberalism (and its more extremist cousin, libertarianism), the doctrine of manifest destiny, the belief in the necessity of “progress,” and even Russian cosmism.6

In the early 21st century, the trend in the U.S. space community, energized during Ronald Reagan’s administration and reinvigorated during the George W. Bush administration, has been to view the solar system as an environment to exploit, as we have done with our own planetary environment. From this “dominionist” or “manifest destiny” perspective, our home planet, and our home solar system, are seen as resources here for humans to use as they like. The Obama administration embraced this way of thinking and advanced the cause of colonization and exploitation. Though at this writing the Trump administration has not issued any official guidance on the future of human exploration, except for NASA Administrator Jim Bridenstine’s repeated claim that NASA will be returning people to the Moon and landing people on Mars, it is reasonable to assume we will see no change in ideological direction.

As to American exceptionalism, political scientist Seymour Martin Lipset wrote, “The United States is a country organized around an ideology which includes a set of dogmas about the nature of a good society. Americanism…is an ideology in the same way that communism or fascism or liberalism are isms…. The nation’s ideology can be described in five words: liberty, egalitarianism, individualism, populism, and laissez-faire.” With the exception of the former Soviet Union, he noted, “other countries define themselves by a common history as birthright communities, not by ideology.”7

The idea of American exceptionalism as it appears in space exploration rhetoric looks bright and shiny on the surface – it’s about the U.S. leading in space exploration for the benefit of humankind. Beneath that shiny surface, though, lies neoliberal/libertarian ideology, an embrace of space as a wide-open frontier, open to exploitation and colonization, ripe for so-called commercialization unfettered by government oversight. It promotes capitalism and development, whenever and wherever possible, according to the principle that those who get there first get the most.

Behind today's American exceptionalism lies a specific religious vision of manifest destiny. Historian Anders Stephanson has explored the premise that the ideology of manifest destiny “is of signal importance in the way the United States came to understand itself in the world and still does…. The world as God’s ‘manifestation’ and history as predetermined ‘destiny’ had been ideological staples of the strongly providentialist period in England between 1620 and 1660,” the period when English Puritans migrated to North America, bringing their beliefs with them. The related belief in “right” – that is, that white Europeans had been “chosen by the finger of God to possess (America)” – is at least as old. These beliefs came to underlay a U.S. national narrative of “prophecy, messianism, and historical transcendence.”8

Some threads of Russian cosmist philosophy are also woven into the web of beliefs propagated by advocates of space colonies – the belief that humans are destined to conquer the planets and the stars, to populate the universe, to evolve to a higher form in space.9 While Russian Orthodox cosmist philosopher Nikolai Fedorov (1828–1903) is not often cited by space colonization advocates, his disciple Konstantin Tsiolkovsky (1857–1935) often is, especially for his avowal that while Earth is the cradle of humanity, humans can’t stay in their cradle forever.

For more than 500 years, these ideologies have wreaked havoc on Earth, and they should not be exported to other planets. The founding declaration of the Mars Society states: “The settling of the Martian New World is an opportunity for a noble experiment in which humanity has another chance to shed old baggage and begin the world anew; carrying forward as much of the best of our heritage as possible and leaving the worst behind.” Human societies have tried and failed to “shed old baggage” over centuries. We have not yet learned how to do it.

3. Conclusion

Except for the threads of Russian cosmism, the ideology of space colonization and exploitation is largely Western, and Christian, as noted above. It appears to be some interpretation of Christian dominion, or dominionist, theology that drives colonization advocates to declare that humans are destined to fill the universe, that humans “must” colonize Mars, that outer space resources are there for the taking.

The ideology of space exploration is in need of rejuvenation. The author advocates a vision of a human future in space in which humanity finds its way to a collective peaceful existence on Spaceship Earth, a way to work together to preserve life here and to look for life out there. Perhaps at some point in the distant future, humans might be ready – technologically and socially – to live together peacefully on other planets. But we are not there yet.

#### Everything we screwed up on earth is based on patterns of behavior that we will take with us to space. It won’t solve sustainability.

Lori Marino 19, Kimmela Center for Animal Advocacy, neuroscientist and expert in animal behavior and intelligence, formerly on the faculty of Emory University, “Humanity Is Not Prepared to Colonize Mars,” Futures, vol. 110, 06/01/2019, pp. 15–18

1. The urgent need to escape ourselves

Many scientists, engineers, futurists, space explorers and members of the public promote the idea that our species should colonize Mars. They believe that we have a mandate to explore and live upon other worlds and some even see it as an urgent imperative because the earth is fast reaching a point of unsustainability for life. The most active and visible proponent of this idea is Elon Musk, who has stated:

Ultimately, the thing that is super important in the grand scale of history is, are we on a path to becoming a multi-planet species or not. If we're not, that's not a very bright future. We'll just be hanging out on Earth until some eventual calamity claims us.

– Elon Musk

In Musk’s view we need a back-up planet. But he doesn’t acknowledge that we ourselves are the cause of this dire situation. And therein lies the problem and the reason we, as a species, have no business trying to colonize another planet. Musk’s reason for wanting to colonize Mars is to save ourselves from ourselves and it is self-evident that this alone recommends we should not be going anywhere.

Let’s examine the facts through analogy. It would seem to me that if you apply for any job whatsoever you should be qualified. Company manager? Check. Anesthesiologist? Check. Car mechanic? Check. Going to Mars is a big job but it’s still a job. So, what are humanity’s qualifications? Let’s look at the reality of who we are and the misguided assumptions that shape our thinking on the matter.

2. Humanity’s track record

What is our species’ qualifications for eking out a sustainable life on Mars? The best predictor of future behavior is past behavior. So let’s take a look at just a small fraction of the “lines on our species’ resume”.

2.1. Human-overpopulation

Overpopulation occurs when a species' population exceeds the carrying capacity of its ecological niche. When this happens there is a scarcity of space, resources; other species are crowded out and eventually disappear. Overpopulation is not just about the numbers of humans on the planet but about how we use our environment, i.e. over-exploitation, over-consumption and inefficient waste management. And all of these factors are central to the sustainability of the planet, and the survival of other species as well as our own of over 7 billion and rising.

2.1.1. Facts

• Human population continues to grow unchecked while crowding out the world’s biodiversity causing a precipitous decline in number of species around the globe (Crist, Mora, & Engelman, 2017).

• Humanity is currently using the equivalent of 1.7 earths to provide the resources we use and absorb our waste (Global Footprint Network, 2018, https://www.footprintnetwork.org/).

• Human population growth and misuse of non-renewable resources is directly and indirectly causing increasingly-severe global deficits in economic equity, access to food and water, quality of life, and political stability, and an increase in violent conflict (Harris, 2000).

2.2. Global climate change, pollution and resource obliteration

Musk’s argument is shored up by the frightening prospect of dwindling earthly resources but silent on the fact that we are the cause. The sustainability of any human activity has to do with how we manage resources and waste products over time. The human track record on this score is a grim substantiation that we are unable and/or unwilling to control ourselves.

Facts:

• Our species is responsible for a current global warming trend that is causing increasing impacts on average land and ocean temperatures, stability of sea levels, glacial movements, weather, and levels of ocean acidification, to name just a few of the many interrelated effects. (National Aeronautics & Space Administration, 2018, https://climate.nasa.gov/evidence/).

• Animal agriculture, i.e. intensive animal farming, contributes over 18% of greenhouse gases to the environment, exceeding all cars, trains and airplanes combined (O’Mara, 2011).

• We use 70% of the planet’s fresh water to raise animals for food, creating crises in drinkable water for many human populations around the world. There are currently 350 million people at risk of losing access to drinking water (Earthscan, 2007).

• Our continued over-fishing of the oceans has led to the prediction of a global fisheries collapse by 2048 (Worm & Branch, 2012; Worm et al., 2006).

• And in our “disposable society” over five trillion pieces of plastic weighing over 250,000 tons floats in convergence zones (gyres) in the world’s oceans wreaking havoc on marine ecosystems and causing harm to marine animals from zooplankton to cetaceans to seabirds and reptiles (Eriksen, Lebreton, Carson, Thiel, & Moore, 2014). By 2050 the oceans will contain more plastic than fish by weight (World Economic Forum, 2016; Anonymous, 2019 https://www.ellenmacarthurfoundation.org/assets/downloads/publications/NPEC-Hybrid\_English\_22-11-17\_Digital.pdf).

2.3. Mass extinction

While species extinctions occur on a regular basis (background extinction) an “extinction event” is different. An extinction event (also known as a mass extinction or biotic crisis) is a widespread and rapid decrease in the number of species which exceeds the rate of speciation at significantly greater levels than the background extinction rate. The sixth extinction or Anthropocene extinction is the ongoing extinction event of species mainly as a result of human activity (Kolbert, 2014). The current rate of extinction of species is estimated at 100′s to 1,000′s of times higher than natural background rates (Pimm, Russell, Gittleman, & Brooks, 1995; Ripple et al., 2017). Our species, thus far, has simply been unable to live sustainably with other animals on this planet.

2.3.1. Facts

• Nearly a third of the total number of species on earth are threatened with extinction, including 41% of amphibian species, 33% of reef building corals, 30% of conifers, 25% of mammals, 13% of birds and one in five plant species. The 2018 update is worse. We are now losing three species per hour (IUCN, 2018, http://www.iucnredlist.org/about/summary-statistics)

• Deforestation (to clear land for animal agriculture and for timber) is one of the main causes of the continued mass extinction event. Forest destruction in Brazil from 1995 to 2000 averaged almost two million hectares a year, which is equivalent to seven football fields a minute (Smithsonian Institution, 2002). Today, we are destroying 27 “soccer fields” of forest every minute globally and an estimated 100 species of plants and animals go extinct every day because of this activity (World Wildlife Fund, 2018, https://www.worldwildlife.org/threats/deforestation).

• In the past decade, wildlife trafficking – the poaching or other taking of protected species and the illegal trade in wildlife and their body parts and products – has escalated into an international crisis. In the last century, rampant ivory poaching, killing for meat, and habitat loss caused African elephant numbers to drop from over ten million animals in 1900 to fewer than 500,000 by the late 1980′s (U.S. Fish & Wildlife Service, 2014, https://www.fws.gov/international/pdf/factsheet-african-elephant.pdf). And our closest relatives, the great apes, are being decimated by poaching for meat, the human pet trade, wildlife trafficking for zoos and tourist attractions. More than 22,000 apes were killed or captured to be sold between 2005 and 2011 (https://blogs.scientificamerican.com/extinction-countdown/great-apes-thousdands-poached-stolen/). This activity is growing – not slowing down.

Is this the resume of a species ready to colonize another planet? Going back to our analogy, arguing that our species is qualified to colonize Mars is like arguing for the qualifications of the company manager who lacks organizational skills, the anesthesiologist who loses every other patient he “puts under”, and the car mechanic who never worked on a carburetor.

3. False and dangerous premises

But the mythology of Mars colonization remains popular and is premised upon several unsupported assumptions used to counter the above problems:

• We have learned our lesson on earth and will do better the next time.

• The people who colonize Mars will not fall prey to the same problems we’ve been vulnerable to throughout human history. Human psychology will change.

• We can reconstitute what we lost, including extinct plants and animals.

• Bottom line: The earth and its inhabitants are disposable and we can start all over again.

Our species is so fatally hubristic that we continue to imagine that we can live sustainably on Mars – a place inhospitable to our species – despite the fact that we cannot do so on earth – the planet that we evolved on and are adapted to.

Ironically, if we continue along the same trajectory – creating zones of ecosystem destruction known as dead zones – we will not need to go to Mars to meet the challenge of existence on an entirely inhospitable planet.

4. Wherever you go – there you are

The problem with thinking we can colonize Mars is that wherever you go, there you are. There is no getting away from ourselves. The same human brain (and psychology) that created a situation on earth compelling us to try to start over on Mars is to confront the very question of whether the planet can be retooled to become something it is not. And, unfortunately, it isn’t even as conceivable as picking up the qualifications for being a company manager, anesthesiologist, or car mechanic. It is qualitatively more difficult; there is no evidence that we can change who we are that dramatically.

A statement by Bas Londorp perfectly captures our inability to get away from our own hubris:

If humanity can send humans to Mars, is there anything we cannot do?

-Bas Londorp, MarsfortheMany.com

The answer is yes, there is indeed one thing we cannot seem to do – live on earth sustainably.

We are not psychologically equipped to be a “multi-planet species” but we can use this knowledge to try to make a go of it on the one planet that we have any chance of thriving on – earth.

It is time for our species to stop playing Buck Rogers and get to the task of saving our own planet.

### AT: Innovation Turn---AT: Space---Gov Solves

#### Government intervention in the economy is compatible with space colonization.

Paris Marx 20, freelance writer, host of left-wing tech podcast Tech Won't Save Us, and editor of Radical Urbanist, “Yes to Space Exploration. No to Space Capitalism.,” Jacobin, 6/8/2020, https://jacobinmag.com/2020/06/spacex-elon-musk-jeff-bezos-capitalism

The Future They Want

Musk and Bezos are the leading drivers of the modern push to privatize and colonize space through their respective companies, SpaceX and Blue Origin. Their visions differ slightly, with Musk preferring to colonize Mars, while Bezos has more interest in building space colonies in orbit.

In 2016, Musk claimed he would begin sending rockets to Mars in 2018. That never happened, but it hasn’t ended his obsession. Musk is determined to make humans a multi-planetary species, framing our choice as either space colonization or the risk of extinction. Bezos says that Earth is the best planet in our solar system, but if we don’t colonize space we doom ourselves to “stasis and rationing.”

These framings serve the interests of these billionaires, and make it seem like colonizing space is an obvious and necessary choice when it isn’t. It ignores their personal culpability and the role of the capitalist system they seek to reproduce in causing the problems they say we need to flee in the first place.

Billionaires have a much greater carbon footprint than ordinary people, with Musk flying his private jet all around the world as he claims to be an environmental champion. Amazon, meanwhile, is courting oil and gas companies with cloud services to make their business more efficient, and Tesla is selling a false vision of sustainability that purposely serves people like Musk, all while capitalism continues to drive the climate system toward the cliff edge. Colonizing space will not save us from billionaire-fueled climate dystopia.

But these billionaires do not hide who would be served by their futures. Musk has given many figures for the cost of a ticket to Mars, but they’re never cheap. He told Vance the tickets would cost $500,000 to $1 million, a price at which he thinks “it’s highly likely that there will be a self-sustaining Martian colony.” However, the workers for such a colony clearly won’t be able to buy their own way. Rather, Musk tweeted a plan for Martian indentured servitude where workers would take on loans to pay for their tickets and pay them off later because “There will be a lot of jobs on Mars!”

Bezos is even more open about how the workforce will have to expand to serve his vision, but has little to say about what they’ll be doing. His plan to maintain economic “growth and dynamism” requires the human population to grow to a trillion people. He claims this would create “a thousand Mozarts and a thousand Einsteins” who would live in space colonies that are supposed to house a million people each, with the surface of Earth being mainly for tourism. Meanwhile, industrial and mining work would move into orbit so as not to pollute the planet, and while he doesn’t explicitly acknowledge it, it’s likely that’s where you’ll find many of those trillion workers toiling for their space overlord and his descendants.

Space Shouldn’t Serve Capitalists

In 1978, Murray Bookchin skewered a certain brand of futurism that sought to “extend the present into the future” and desired “multinational corporations to become multi-cosmic corporations.” Much of this future thinking obsesses about possible changes to technology, but seeks to preserve the existing social and economic relations — “the present as it exists today, projected, one hundred years from now,” as Bookchin put it. That’s at the core of the space billionaires’ vision for the future.

Space has been used by past US presidents to bolster American power and influence, but it was largely accepted that capitalism ended at the edge of the atmosphere. That’s no longer the case, and just as past capitalist expansions have come at the expense of poor and working people to enrich a small elite, so too will this one. Bezos and Trump may have a public feud, but that doesn’t mean that their mutual interest isn’t served by a renewed US push into space that funnels massive public funds into private pockets and seeks to open celestial bodies to capitalist resource extraction.

This is not to say that we need to halt space exploration. The collective interest of humanity is served by learning more about the solar system and the universe beyond, but the goal of such missions must be driven by gaining scientific knowledge and enhancing global cooperation, not nationalism and profit-making.

Yet that’s exactly what the space billionaires and American authoritarians have found common cause in, with Trump declaring that “a new age of American ambition has now begun” at a NASA press briefing just hours before cities across the country were placed under curfew last week. Before space can be explored in a way that benefits all of humankind, existing social relations must be transformed, not extended into the stars as part of a new colonial project.

#### ‘Government bad for space’ arguments are smooth brained.

Victor L. Shammas & Tomas B. Holen 19, Shammas is with the Oslo Metropolitan University, Work Research Institute (AFI), Oslo, Norway; Holden is an independent scholar, Oslo, Norway, “One Giant Leap for Capitalistkind: Private Enterprise in Outer Space,” Palgrave Communications, vol. 5, no. 1, 1, Palgrave, 01/29/2019, pp. 1–9

What role, then, for the state? The frontiersmen of NewSpace tend to think of themselves as libertarians, pioneers beyond the domain of state bureaucracy (see Nelson and Block, 2018). ‘The government should leave the design work and ownership of the product to the private sector', the author of a 2017 report, Capitalism in Space, advocates. ‘The private companies know best how to build their own products to maximize performance while lowering cost' (Zimmerman, 2017, p. 27). One ethnographer notes that ‘politically, right-libertarianism prevails' amongst NewSpace entrepreneurs (Valentine, 2016, p. 1047–1048). Just as Donald Rumsfeld dismissed the opponents to the Iraq War as ‘Old Europe', so too are state entities’ interests in space exploration shrugged off as symptoms of ‘Old Space'. Elon Musk, we are told in a recent biography, unlike the sluggish Big State actors of yore, ‘would apply some of the start-up techniques he’d learned in Silicon Valley to run SpaceX lean and fast…As a private company, SpaceX would also avoid the waste and cost overruns associated with government contractors' (Vance, 2015, p. 114). This libertarianism-in-space has found a willing chorus of academic supporters. The legal scholar Virgiliu Pop introduces the notion of the frontier paradigm (combining laissez-faire economics, market competition, and an individualist ethic) into the domain of space law, claiming that this paradigm has ‘proven its worth on our planet' and will ‘most likely…do so in the extraterrestrial realms' as well (Pop, 2009, p. vi). This frontier paradigm is not entirely new: a ‘Columbus mythology', centering on the ‘noble explorer', was continuously evoked in the United States during the Cold War space race (Dickens and Ormrod, 2016, pp. 79, 162–164).

But the entrepreneurial libertarianism of capitalistkind is undermined by the reliance of the entire NewSpace complex on extensive support from the state, ‘a public-private financing model underpinning long-shot start-ups' that in the case of Musk’s three main companies (SpaceX, SolarCity Corp., and Tesla) has been underpinned by $4.9 billion dollars in government subsidies (Hirsch, 2015). In the nascent field of space tourism, Cohen (2017) argues that what began as an almost entirely private venture quickly ground to a halt in the face of insurmountable technical and financial obstacles, only solved by piggybacking on large state-run projects, such as selling trips to the International Space Station, against the objections of NASA scientists. The business model of NewSpace depends on the taxpayer’s dollar while making pretensions to individual self-reliance. The vast majority of present-day clients of private aerospace corporations are government clients, usually military in origin. Furthermore, the bulk of rocket launches in the United States take place on government property, usually operated by the US Air Force or NASA.Footnote13

This inward tension between state dependency and capitalist autonomy is itself a product of neoliberalism’s contradictory demand for a minimal, “slim” state, while simultaneously (and in fact) relying on a state reengineered and retooled for the purposes of capital accumulation (Wacquant, 2012). As Lazzarato writes, ‘To be able to be “laissez-faire”, it is necessary to intervene a great deal' (2017, p. 7). Space libertarianism is libertarian in name only: behind every NewSpace venture looms a thick web of government spending programs, regulatory agencies, public infrastructure, and universities bolstered by research grants from the state. SpaceX would not exist were it not for state-sponsored contracts of satellite launches. Similarly, in 2018, the US Defense Advanced Research Projects Agency (DARPA)—the famed origin of the World Wide Web—announced that it would launch a ‘responsive launch competition', meaning essentially the reuse of launch vehicles, representing an attempt by the state to ‘harness growing commercial capabilities' and place them in the service of the state’s interest in ensuring ‘national security' (Foust, 2018b).

This libertarianism has been steadily growing in the nexus between Silicon Valley, Stanford University, Wall Street, and the Washington political establishment, which tend to place a high value on Randian ‘objectivism' and participate in a long American intellectual heritage of individualistic ‘bootstrapping' and (allegedly) gritty self-reliance. But as Nelson and Block (2018, p. 189–197) recognize, one of the central symbolic operations of capitalistkind resides in concealing its reliance on the state by mobilizing the charm of its entrepreneurial constituents and the spectacle of space. There is a case to be made for the idea that SpaceX and its ilk resemble semi-private corporations like the British East India Company. The latter, “incorporated by royal charter from Her Majesty Queen Elizabeth I in 1600 to trade in silk and spices, and other profitable Indian commodities,” recruited soldiers and built a ‘commercial business [that] quickly became a business of conquest' (Tharoor, 2017). SpaceX, too, is increasingly imbricated with an attempt on the part of a particular state, the United States, to colonize and appropriate resources derived from a particular area, that of outer space; it, too, depends on the infrastructure, contracts, and regulatory environment that thus far only a state seems able to provide. Its private character, like that of the East India Company, is troubled by being deeply embedded in the state. As one commentator has observed of SpaceX, ‘If there’s a consistent charge against Elon Musk and his high-flying companies…it’s that they’re not really examples of independent, innovative market capitalism. Rather, they’re government contractors, dependent on taxpayer money to stay afloat' (cit. Nelson and Block, 2018, p. 189).

Perhaps this should not come as a surprise. As Bourdieu (2005, p. 12) observed, ‘The economic field is, more than any other, inhabited by the state, which contributes at every moment to its existence and persistence, and also to the structure of the relations of force that characterize it'. The state lays out the preconditions for market exchanges. Under neoliberalism, the state is the preeminent facilitator of markets. The neoliberal state is not so much a Minimalstaat, night watchman state, or slim state as it is the prima causa of market society (see, e.g., Wacquant, 2012). Similarly, in the political theory of Deleuze and Guattari, any economic development presupposes the political differentiation caused by the state (Deleuze and Guattari, 2004a, p. 237–238). Even in the global environment of contemporary capitalism, the market cannot operate without the state becoming integrated with capitalism itself, as ‘it is the modern state that gives capitalism its models of realization' (Deleuze and Guattari, 2004b, p. 480). For capitalism to survive in outer space, the state must create a regulatory environment, subsidize infrastructure, and hand down contracts – in short, assemble outer space as a domain made accessible in legal, technical, and economic ways.

### AT: Innovation Turn---AT: Space---AT: Bostrom

#### Short-term risk mitigation’s the best chance to maximize value, even accounting for Bostromian exponential calculations.

Marko Kovic 21, co-founder president of the nonprofit think tank ZIPAR (Zurich Institute of Public Affairs Research) and the co-founder and CEO of the consulting firm ars cognitionis, “Risks of Space Colonization,” Futures, vol. 126, 02/01/2021, p. 102638

3.1 Neglecting existential risks

Space colonization is, as I argue in the introduction, a generalized strategy for the mitigation of existential risks: If we manage to establish permanent and sustainable habitats beyond Earth, there is a chance that existential risks would either become less probable or cease to be existential at all because not all proverbial eggs are in the same basket. Given this premise, it is tempting to extrapolate it into real-life policy: If space colonization is a hedge against existential risks, then achievisng space colonization capabilities must be our top priority.

The problem with this prioritization strategy is that while it might, on its own, increase the probability of space colonization, it ignores the probabilities of existing existential risks. If we want to create as positive a future for humankind (in the sense of increasing humankind's future moral expected value), then we need to weigh the benefits of achieving space colonization capabilities sooner rather than later against the bene ts of reducing existential risks. When we compare the bene ts of these two approaches, as Bostrom [2, 5] argues, it quickly becomes obvious that that the benefits of even marginally reducing existential risks over a given time period are probably much greater than the damage of delaying space colonization by that same time period.

A delay of, say, 100 years in colonizing space has a relatively minor negative impact compared to the immense positive impact of even marginally reducing existential risks in the same time frame. If we, for example, adopt the conservative estimate of 10^15 total future human lives if humankind goes on to enjoy a colonized long-term future [23], then reducing overall existential risks by merely 0.0001 (one percent of one percent) has an expected value of 10^11, or 100 billion, lives. Even the tiniest reduction in existential risks has therefore an immense positive benefit that easily offsets the positive bene t of achieving space colonization capabilities sooner rather than later. This is almost certainly true even if we take into account the potential contribution of space colonization to mitigating existential risks. Early colonization efforts are unlikely to mitigate existential risks as much as targeted existential risk mitigation strategies because the early stages of colonization are bound to be small in scale and fragile. Early habitats would in e ect do next to nothing to mitigate existential risks, so creating those early habitats as quickly as possible would do very little in terms of existential risk mitigation.

3.2 Speeding up the rate of existential risk creation

Achieving space colonization capabilities means obtaining sufficiently advanced technology for venturing beyond Earth and permanently sustaining human life there. In order to achieve that goal, maximizing the pace of technological development seems like an instrumentally desirable goal: The faster we technologically innovate and develop, the higher the probability of obtaining space colonization capabilities. However, the problem with such a technological push is that the increased pace of technological development might also result in an increased pace of existential risk creation.

As I argue above in subsection 2.1, anthropogenic existential risks correlate with human technological development. All non-natural existential risks are the result of our technological progress, and more technological progress is likely to beget more existential risks. Of course, this should not be misunderstood as a quasi-Luddite argument against all technological progress in general. Scientific and technological progress has made life enormously better and removed tremendous amounts of suffering from the world, to the bene t of current as well as all future generations. However, existential risks are an unprecedented challenge, and the more numerous and probable they are, the more di cult it is to mitigate them in time. In the context of space colonization, this issue is of elevated importance because, as I argue above in subsection 3.1, delaying space colonization has an almost imperceptible impact on the long-term future of humankind, whereas existential risks and our attempts at mitigating them (or failing to do so) has an enormous impact.

3.3 Neglecting acute catastrophic risks

Humankind is today not only faced with existential, but also with catastrophic risks. The potential damage of catastrophic risks is smaller than that of existential risks, but still not morally negligible. Issues such as (extreme) poverty, the global burden of disease, global animal welfare in farming, and so forth are pressing issues, and they are, in a sense, more acute than existential risks because they are causing enormous moral disvalue right now. The shadow that acute catastrophic risks are casting into the future is not as long as that of existential risks in terms of overall expected disvalue, but in principle, a similar neglect argument as with existential applies in the context of space colonization. Delaying space colonization in favor of mitigating catastrophic risks could in some scenarios yield greater overall moral benefits than achieving space colonization sooner without having mitigated those catastrophic risks.

Imagine, for example, a timeline A in which humankind delays space colo-nization in favor of pursuing a cure against all forms of cancer, and a timeline B in which humankind stresses colonizing space and does not focus on cancer cures. In timeline A, a universal cure is found, and billions of people immediately bene t (they are spared terrible su ering). In addition, all future generations bene t as well. In timeline B, there is no cure, and humankind has started expanding beyond Earth. During the colonization delay in timeline A, billions of people lead much better lives and once humans in timeline A start colonizing space, there is no cancer and the disvalue it creates. In timeline B, however, there would potentially be a colonization-induced population explosion before a cancer cure is eventually developed, which would mean that in timeline B, there is enormous disvalue (the colonizing human population was su ering cancer for a while) that is not o set by the relatively small gain in moral value of achieving space colonization sooner.

The case in favor of prioritizing catastrophic risk mitigation and thus accepting delays space colonization is not as strong as in the context of existential risks. The case for catastrophic risk prioritization is contingent on the size of the catastrophic risk in question. It is possible that not all catastrophic risks are grave enough that they warrant delaying space colonization. In general, the argument against neglecting catastrophic risks should not be misunderstood as the cliche argument of \there are more important problems today than space". The point is explicitly not that mitigating all existing risks should be prioritized over colonizing space, but that some catastrophic risks could create enough future disvalue that delaying space colonization and mitigating them yields the better overall moral outcome.

### AT: Innovation Turn---AT: Space---AT: Resource Wars

#### Colonization doesn’t solve resource wars---would fight during expansion.

Konrad Szocik 19, University of Information Technology and Management in Rzeszow, Department of Philosophy and Cognitive Science, “Should and Could Humans Go to Mars? Yes, but Not Now and Not in the near Future,” Futures, vol. 105, 01/01/2019, pp. 54–66

2.2. No rationale based on militarization of space industry and space exploration

Space programs as, for instance, Apollo program in the past, often have political purposes. It is hard to not see obvious military context and military application of the current “space arm race” between the US, China, and Russia. Space agencies are at least partially militarized. An attempt to build “space force” announced in June 2018 by Donald Trump illustrates the case. In the world in which energy, information, and finance are based on computer systems, internet and satellite connection, dominance or at least strong position in space means dominance over the world or, at least, the power to protect own country and own interests. Space exploration sponsored by government is not oriented toward the welfare of mankind. And even if this were the case, possible solutions that could be applied in Earth are inhibited, slowed down, or just downplayed by political institutions.

While space exploration could offer benefits for science and possibly for well-being of the mankind, the most likely purpose might be militarization of the space industry. Columba Peoples (2010) shows how spacefaring countries may use space exploration to develop their military program. This is also an obstacle to the long-term human mission to Mars. Space industry at a low Earth orbit is profitable and reasonable for military purposes but military application of Mars base, mostly due to the large distance from Earth and the limited technological capacities of Mars space craft and Mars habitat, seems not very useful. If we assume that military application is the most important or just very important incentive for space exploration, there is minimal incentive in regard to mission to Mars. As Wade L. Huntley et al. (2010, p. 28) points out, old patterns of international politics based on rivalry, when equipped with new advanced space technology, will likely extend terrestrial competition to space.

### AT: War Turn---2AC

#### Degrowth doesn’t cause war.

Jianan Liao 19, Shenzhen Nanshan Foreign Language School, February 2019, “Business Cycle and War: A Literature and Evaluation,” https://dx.doi.org/10.2991/ssmi-18.2019.37

Through the comparison of the two views, it can be found that both sides are too vague in the description of the concept of business cycle. According to economists such as Joseph Schumpeter, the business cycle is divided into four phases: expansion, crisis, recession, recovery. [12] Although there are discords in the division and naming of business cycle, it is certain that they are not simply divided into two stages of rise and recession. However, as mentioned above, scholars who discussed the relationship between business cycle and war often failed to divide the business cycle into four stages in detail to analyze the relationship.

First, war can occur at any stage of expansion, crisis, recession, recovery, so it is unrealistic to assume that wars occur at any particular stage of the business cycle. On the one hand, although the domestic economic problems in the crisis/recession/depression period break out and become prominent in a short time, in fact, such challenge exists at all stages of the business cycle. When countries cannot manage to solve these problems through conventional approaches, including fiscal and monetary policies, they may resort to military expansion to achieve their goals, a theory known as Lateral Pressure. [13] Under such circumstances, even countries in the period of economic expansion are facing downward pressure on the economy and may try to solve the problem through expansion. On the other hand, although the resources required for foreign wars are huge for countries in economic depression, the decision to wage wars depends largely on the consideration of the gain and loss of wars. Even during depression, governments can raise funding for war by issuing bonds. Argentina, for example, was mired in economic stagflation before the war on the Malvinas islands (also known as the Falkland islands in the UK). In fact, many governments would dramatically increase their expenditure to stimulate the economy during the recession, and economically war is the same as these policies, so the claim that a depressed economy cannot support a war is unfounded. In addition, during the crisis period of the business cycle, which is the early stage of the economic downturn, despite the economic crisis and potential depression, the country still retains the ability to start wars based on its economic and military power. Based on the above understanding, war has the conditions and reasons for its outbreak in all stages of the business cycle.

Second, the economic origin for the outbreak of war is downward pressure on the economy rather than optimism or competition for monopoly capital, which may exist during economic recession or economic prosperity. This is due to a fact that during economic prosperity, people are also worried about a potential economic recession. Blainey pointed out that wars often occur in the economic upturn, which is caused by the optimism in people's mind [14], that is, the confidence to prevail. This interpretation linking optimism and war ignores the strength contrast between the warring parties. Not all wars are equally comprehensive, and there have always been wars of unequal strength. In such a war, one of the parties tends to have an absolute advantage, so the expectation of the outcome of the war is not directly related to the economic situation of the country. Optimism is not a major factor leading to war, but may somewhat serve as stimulation. In addition, Lenin attributed the war to competition between monopoly capital. This theory may seem plausible, but its scope of application is obviously too narrow. Lenin's theory of imperialism is only applicable to developed capitalist countries in the late stage of the development capitalism, but in reality, many wars take place among developing countries whose economies are still at their beginning stages. Therefore, the theory centered on competition among monopoly capital cannot explain most foreign wars. Moreover, even wars that occur during periods of economic expansion are likely to result from the potential expectation of economic recession, the "limits of growth" [15] faced during prosperity -- a potential deficiency of market demand. So the downward pressure on the economy is the cause of war.

Third, the business cycle may be related with the intensity, instead of the outbreak, of the war. Scholars who supported the first two views did not pay attention to the underlying relationship between business cycle and the intensity of war. Some scholars, such as Nikolai Kondratieff and Joshua Goldstein, believes that the business cycle is not directly related to the outbreak of war, but the outbreak of war during the economic upswing appears to be more intense and persistent. In their analysis of the business cycle and war, Kondratieff and Goldstein discovered that the most dramatic and deadly wars occurred during periods of economic upswing. This finding may provide some clues on the relationship between war and the business cycle. Although the relationship between the outbreak of war and the business cycle is unclear, the scale of the war is likely to be influenced by the exact phase of the business cycle in which the belligerents are engaged. Such a phenomenon might make sense, since countries in economic upturn have better fiscal capacity, making them more likely to wage large-scale wars. Moreover, such relationship may also stem from the optimism pointed out by Blainey. While optimism may not directly lead to wars, it may have an impact on the choice of rivals. This is because optimism about national strength and the outcome of the war may drive countries to choose stronger rivals. The resulting war is likely to be far more massive and bloody. Nevertheless, more research is needed to specifically reveal this relationship.

### AT: War Turn---Defense

#### Recessions don’t make war more likely---conflict can start at any point in the business cycle---their claims rest of theoretical support that is unproven by empirics---the largest wars happen in periods of growth because leaders are more confident and pick larger rivals---that’s Liao.

#### Economic downturn doesn’t cause war

Stephen M. Walt 20, the Robert and Renée Belfer professor of international relations at Harvard University, 5/13/20, “Will a Global Depression Trigger Another World War?,” https://foreignpolicy.com/2020/05/13/coronavirus-pandemic-depression-economy-world-war/

For these reasons, the pandemic itself may be conducive to peace. But what about the relationship between broader economic conditions and the likelihood of war? Might a few leaders still convince themselves that provoking a crisis and going to war could still advance either long-term national interests or their own political fortunes? Are the other paths by which a deep and sustained economic downturn might make serious global conflict more likely?

One familiar argument is the so-called diversionary (or “scapegoat”) theory of war. It suggests that leaders who are worried about their popularity at home will try to divert attention from their failures by provoking a crisis with a foreign power and maybe even using force against it. Drawing on this logic, some Americans now worry that President Donald Trump will decide to attack a country like Iran or Venezuela in the run-up to the presidential election and especially if he thinks he’s likely to lose.

This outcome strikes me as unlikely, even if one ignores the logical and empirical flaws in the theory itself. War is always a gamble, and should things go badly—even a little bit—it would hammer the last nail in the coffin of Trump’s declining fortunes. Moreover, none of the countries Trump might consider going after pose an imminent threat to U.S. security, and even his staunchest supporters may wonder why he is wasting time and money going after Iran or Venezuela at a moment when thousands of Americans are dying preventable deaths at home. Even a successful military action won’t put Americans back to work, create the sort of testing-and-tracing regime that competent governments around the world have been able to implement already, or hasten the development of a vaccine. The same logic is likely to guide the decisions of other world leaders too.

Another familiar folk theory is “military Keynesianism.” War generates a lot of economic demand, and it can sometimes lift depressed economies out of the doldrums and back toward prosperity and full employment. The obvious case in point here is World War II, which did help the U.S economy finally escape the quicksand of the Great Depression. Those who are convinced that great powers go to war primarily to keep Big Business (or the arms industry) happy are naturally drawn to this sort of argument, and they might worry that governments looking at bleak economic forecasts will try to restart their economies through some sort of military adventure.

I doubt it. It takes a really big war to generate a significant stimulus, and it is hard to imagine any country launching a large-scale war—with all its attendant risks—at a moment when debt levels are already soaring. More importantly, there are lots of easier and more direct ways to stimulate the economy—infrastructure spending, unemployment insurance, even “helicopter payments”—and launching a war has to be one of the least efficient methods available. The threat of war usually spooks investors too, which any politician with their eye on the stock market would be loath to do.

Economic downturns can encourage war in some special circumstances, especially when a war would enable a country facing severe hardships to capture something of immediate and significant value. Saddam Hussein’s decision to seize Kuwait in 1990 fits this model perfectly: The Iraqi economy was in terrible shape after its long war with Iran; unemployment was threatening Saddam’s domestic position; Kuwait’s vast oil riches were a considerable prize; and seizing the lightly armed emirate was exceedingly easy to do. Iraq also owed Kuwait a lot of money, and a hostile takeover by Baghdad would wipe those debts off the books overnight. In this case, Iraq’s parlous economic condition clearly made war more likely.

Yet I cannot think of any country in similar circumstances today. Now is hardly the time for Russia to try to grab more of Ukraine—if it even wanted to—or for China to make a play for Taiwan, because the costs of doing so would clearly outweigh the economic benefits. Even conquering an oil-rich country—the sort of greedy acquisitiveness that Trump occasionally hints at—doesn’t look attractive when there’s a vast glut on the market. I might be worried if some weak and defenseless country somehow came to possess the entire global stock of a successful coronavirus vaccine, but that scenario is not even remotely possible.

#### Even massive, long-term econ decline has minimal effects on the probability of war

Stephen M. Walt 20, the Robert and Renée Belfer professor of international relations at Harvard University, 5/13/20, “Will a Global Depression Trigger Another World War?,” https://foreignpolicy.com/2020/05/13/coronavirus-pandemic-depression-economy-world-war/

If one takes a longer-term perspective, however, a sustained economic depression could make war more likely by strengthening fascist or xenophobic political movements, fueling protectionism and hypernationalism, and making it more difficult for countries to reach mutually acceptable bargains with each other. The history of the 1930s shows where such trends can lead, although the economic effects of the Depression are hardly the only reason world politics took such a deadly turn in the 1930s. Nationalism, xenophobia, and authoritarian rule were making a comeback well before COVID-19 struck, but the economic misery now occurring in every corner of the world could intensify these trends and leave us in a more war-prone condition when fear of the virus has diminished.

On balance, however, I do not think that even the extraordinary economic conditions we are witnessing today are going to have much impact on the likelihood of war. Why? First of all, if depressions were a powerful cause of war, there would be a lot more of the latter. To take one example, the United States has suffered 40 or more recessions since the country was founded, yet it has fought perhaps 20 interstate wars, most of them unrelated to the state of the economy. To paraphrase the economist Paul Samuelson’s famous quip about the stock market, if recessions were a powerful cause of war, they would have predicted “nine out of the last five (or fewer).”

Second, states do not start wars unless they believe they will win a quick and relatively cheap victory. As John Mearsheimer showed in his classic book Conventional Deterrence, national leaders avoid war when they are convinced it will be long, bloody, costly, and uncertain. To choose war, political leaders have to convince themselves they can either win a quick, cheap, and decisive victory or achieve some limited objective at low cost. Europe went to war in 1914 with each side believing it would win a rapid and easy victory, and Nazi Germany developed the strategy of blitzkrieg in order to subdue its foes as quickly and cheaply as possible. Iraq attacked Iran in 1980 because Saddam believed the Islamic Republic was in disarray and would be easy to defeat, and George W. Bush invaded Iraq in 2003 convinced the war would be short, successful, and pay for itself.

The fact that each of these leaders miscalculated badly does not alter the main point: No matter what a country’s economic condition might be, its leaders will not go to war unless they think they can do so quickly, cheaply, and with a reasonable probability of success.

Third, and most important, the primary motivation for most wars is the desire for security, not economic gain. For this reason, the odds of war increase when states believe the long-term balance of power may be shifting against them, when they are convinced that adversaries are unalterably hostile and cannot be accommodated, and when they are confident they can reverse the unfavorable trends and establish a secure position if they act now. The historian A.J.P. Taylor once observed that “every war between Great Powers [between 1848 and 1918] … started as a preventive war, not as a war of conquest,” and that remains true of most wars fought since then.

The bottom line: Economic conditions (i.e., a depression) may affect the broader political environment in which decisions for war or peace are made, but they are only one factor among many and rarely the most significant. Even if the COVID-19 pandemic has large, lasting, and negative effects on the world economy—as seems quite likely—it is not likely to affect the probability of war very much, especially in the short term.

#### Economic decline increases cooperation.

Christina L. Davis & Krzysztof J. Pelc 17, Christina L. Davis is a Professor of Politics and International Affairs at Princeton; Krzysztof J. Pelc is an Associate Professor of Political Science at McGill University, “Cooperation in Hard Times: Self-restraint of Trade Protection,” Journal of Conflict Resolution, 2017, 61(2): 398-429

Conclusion

Political economy theory would lead us to expect rising trade protection during hard times. Yet empirical evidence on this count has been mixed. Some studies find a correlation between poor macroeconomic conditions and protection, but the worst recession since the Great Depression has generated surprisingly moderate levels of protection. We explain this apparent contradiction. Our statistical findings show that under conditions of pervasive economic crisis at the international level, states exercise more restraint than they would when facing crisis alone. These results throw light on behavior not only during the crisis, but throughout the WTO period, from 1995 to the present. One concern may be that the restraint we observe during widespread crises is actually the result of a decrease in aggregate demand and that domestic pressure for import relief is lessened by the decline of world trade. By controlling for product-level imports, we show that the restraint on remedy use is not a byproduct of declining imports. We also take into account the ability of some countries to manipulate their currency and demonstrate that the relationship between crisis and trade protection holds independent of exchange rate policies.

Government decisions to impose costs on their trade partners by taking advantage of their legal right to use flexibility measures are driven not only by the domestic situation but also by circumstances abroad. This can give rise to an individual incentive for strategic self-restraint toward trade partners in similar economic trouble. Under conditions of widespread crisis, government leaders fear the repercussions that their own use of trade protection may have on the behavior of trade partners at a time when they cannot afford the economic cost of a trade war. Institutions provide monitoring and a venue for leader interaction that facilitates coordination among states. Here the key function is to reinforce expectations that any move to protect industries will trigger similar moves in other countries. Such coordination often draws on shared historical analogies, such as the Smoot–Hawley lesson, which form a focal point to shape beliefs about appropriate state behavior. Much of the literature has focused on the more visible action of legal enforcement through dispute settlement, but this only captures part of the story. Our research suggests that tools of informal governance such as leader pledges, guidance from the Director General, trade policy reviews, and plenary meetings play a real role within the trade regime. In the absence of sufficiently stringent rules over flexibility measures, compliance alone is insufficient during a global economic crisis. These circumstances trigger informal mechanisms that complement legal rules to support cooperation. During widespread crisis, legal enforcement would be inadequate, and informal governance helps to bolster the system.

Informal coordination is by nature difficult to observe, and we are unable to directly measure this process. Instead, we examine the variation in responses across crises of varying severity, within the context of the same formal setting of the WTO. Yet by focusing on discretionary tools of protection—trade remedies and tariff hikes within the bound rate—we can offer conclusions about how systemic crises shape country restraint independent of formal institutional constraints. Insofar as institutions are generating such restraint, we offer that it is by facilitating informal coordination, since all these instruments of trade protection fall within the letter of the law. Future research should explore trade policy at the micro level to identify which pathway is the most important for coordination. Research at a more macro-historical scope could compare how countries respond to crises under fundamentally different institutional contexts.

In sum, the determinants of protection include economic downturns not only at home but also abroad. Rather than reinforcing pressure for protection, pervasive crisis in the global economy is shown to generate countervailing pressure for restraint in response to domestic crisis. In some cases, hard times bring more, not less, international cooperation.

#### Empirics prove austerity pressures overwhelm.

Christopher Clary 15, Ph.D. in Political Science from MIT, Postdoctoral Fellow, Watson Institute for International Studies, Brown University, “Economic Stress and International Cooperation: Evidence from International Rivalries,” April 22, 2015, http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2597712

Do economic downturns generate pressure for diversionary conflict? Or might downturns encourage austerity and economizing behavior in foreign policy? This paper provides new evidence that economic stress is associated with conciliatory policies between strategic rivals. For states that view each other as military threats, the biggest step possible toward bilateral cooperation is to terminate the rivalry by taking political steps to manage the competition. Drawing on data from 109 distinct rival dyads since 1950, 67 of which terminated, the evidence suggests rivalries were approximately twice as likely to terminate during economic downturns than they were during periods of economic normalcy. This is true controlling for all of the main alternative explanations for peaceful relations between foes (democratic status, nuclear weapons possession, capability imbalance, common enemies, and international systemic changes), as well as many other possible confounding variables. This research questions existing theories claiming that economic downturns are associated with diversionary war, and instead argues that in certain circumstances peace may result from economic troubles.

Defining and Measuring Rivalry and Rivalry Termination

I define a rivalry as the perception by national elites of two states that the other state possesses conflicting interests and presents a military threat of sufficient severity that future military conflict is likely. Rivalry termination is the transition from a state of rivalry to one where conflicts of interest are not viewed as being so severe as to provoke interstate conflict and/or where a mutual recognition of the imbalance in military capabilities makes conflict-causing bargaining failures unlikely. In other words, rivalries terminate when the elites assess that the risks of military conflict between rivals has been reduced dramatically.

This definition draws on a growing quantitative literature most closely associated with the research programs of William Thompson, J. Joseph Hewitt, and James P. Klein, Gary Goertz, and Paul F. Diehl.1 My definition conforms to that of William Thompson. In work with Karen Rasler, they define rivalries as situations in which “[b]oth actors view each other as a significant political-military threat and, therefore, an enemy.”2 In other work, Thompson writing with Michael Colaresi, explains further:

The presumption is that decisionmakers explicitly identify who they think are their foreign enemies. They orient their military preparations and foreign policies toward meeting their threats. They assure their constituents that they will not let their adversaries take advantage. Usually, these activities are done in public. Hence, we should be able to follow the explicit cues in decisionmaker utterances and writings, as well as in the descriptive political histories written about the foreign policies of specific countries.3

Drawing from available records and histories, Thompson and David Dreyer have generated a universe of strategic rivalries from 1494 to 2010 that serves as the basis for this project’s empirical analysis.4 This project measures rivalry termination as occurring on the last year that Thompson and Dreyer record the existence of a rivalry.5

Why Might Economic Crisis Cause Rivalry Termination?

Economic crises lead to conciliatory behavior through five primary channels. (1) Economic crises lead to austerity pressures, which in turn incent leaders to search for ways to cut defense expenditures. (2) Economic crises also encourage strategic reassessment, so that leaders can argue to their peers and their publics that defense spending can be arrested without endangering the state. This can lead to threat deflation, where elites attempt to downplay the seriousness of the threat posed by a former rival. (3) If a state faces multiple threats, economic crises provoke elites to consider threat prioritization, a process that is postponed during periods of economic normalcy. (4) Economic crises increase the political and economic benefit from international economic cooperation. Leaders seek foreign aid, enhanced trade, and increased investment from abroad during periods of economic trouble. This search is made easier if tensions are reduced with historic rivals. (5) Finally, during crises, elites are more prone to select leaders who are perceived as capable of resolving economic difficulties, permitting the emergence of leaders who hold heterodox foreign policy views. Collectively, these mechanisms make it much more likely that a leader will prefer conciliatory policies compared to during periods of economic normalcy. This section reviews this causal logic in greater detail, while also providing historical examples that these mechanisms recur in practice.

#### Stats prove

Daniel Drezner 14, IR prof at Tufts, “The System Worked: Global Economic Governance during the Great Recession,” World Politics, Volume 66. Number 1, January 2014, pp. 123-164

The final significant outcome addresses a dog that hasn't barked: the effect of the Great Recession on cross-border conflict and violence. During the initial stages of the crisis, multiple analysts asserted that the financial crisis would lead states to increase their use of force as a tool for staying in power.42 They voiced genuine concern that the global economic downturn would lead to an increase in conflict—whether through greater internal repression, diversionary wars, arms races, or a ratcheting up of great power conflict. Violence in the Middle East, border disputes in the South China Sea, and even the disruptions of the Occupy movement fueled impressions of a surge in global public disorder.

The aggregate data suggest otherwise, however. The Institute for Economics and Peace has concluded that "the average level of peacefulness in 2012 is approximately the same as it was in 2007."43 Interstate violence in particular has declined since the start of the financial crisis, as have military expenditures in most sampled countries. Other studies confirm that the Great Recession has not triggered any increase in violent conflict, as Lotta Themner and Peter Wallensteen conclude: "[T]he pattern is one of relative stability when we consider the trend for the past five years."44 The secular decline in violence that started with the end of the Cold War has not been reversed. Rogers Brubaker observes that "the crisis has not to date generated the surge in protectionist nationalism or ethnic exclusion that might have been expected."43

### AT: Welfare Turn---2AC

#### Welfare is declining under growth because inequality’s leading to wealth concentration---only redistributive degrowth solves this.

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Four – Secrets of the Good Life,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 152-182

This brings us to the crucial point. When it comes to human welfare, it’s not income as such that matters. It’s what that income can buy, in terms of access to the things we need to live well. It’s the ‘welfare purchasing power’ of income that counts. Trying to run a household on $30,000 in the United States would be a struggle. You can forget sending your kids to a decent university. But the exact same income in Finland, where people enjoy universal healthcare and education and rent controls, would feel luxurious. By expanding people’s access to public services and other commons, we can improve the welfare purchasing power of people’s incomes, enabling flourishing lives for all without needing any additional growth. Justice is the antidote to the growth imperative – and key to solving the climate crisis.

This means fundamentally reversing the economic policies that have dominated for the past forty years. Guided by the dogmas of neoliberalism, governments have privatised public services, slashed social spending, cut wages and labour protections, handed tax cuts to the richest and sent inequality soaring. In an age of climate breakdown, we need to be doing exactly the opposite.

In fact, it is precisely because of neoliberalism that we have seen such a significant disjuncture between GDP and human welfare. Here again, the US provides a good example. Real GDP per capita in the US has doubled since the 1970s. One might assume that such extraordinary growth would have delivered decisive improvements to human lives. And yet the opposite has happened. The poverty rate today is higher, and real wages are lower, than they were forty years ago.29 Despite half a century of growth the country has regressed on these core indicators. How could this possibly have happened? It’s because the vast majority of the new income generated by growth has been appropriated by the already-rich. The annual incomes of the richest 1% have more than tripled over this period, soaring to an average of $1.4 million per person, while ordinary people have gained hardly anything at all.30

With data like this on the table, it becomes clear that growthism is little more than ideology – an ideology that benefits a few at the expense of our collective future. We’re all pushed to step on the accelerator of growth, with deadly consequences for our living planet, all so that a rich elite can get even richer. From the perspective of human life, this is clearly an injustice. And indeed we have been aware of this problem for some time. But from the perspective of ecology, it is even worse – it is a kind of madness.

#### Growth is not improving well-being and satisfaction levels are not correlated with GDP. Social relations are far more important, which degrowth solves.

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Frequently Asked Questions,” The Case for Degrowth, Polity Press, 2020, pp. 110-129

23) Will peoples’ wellbeing suffer without growth?

It depends. Growth has ceased to improve objective or subjective wellbeing.26 The global genuine progress index, a robust collection of wellbeing indicators, shows stagnation since the 1950s in some highincome countries, like the US, and since the 1960s, ’70s or ’80s in others. Only one in three US residents report themselves as being “very happy,” a percentage that has fluctuated, but not changed significantly, since 1973, in spite of sky-rocketing GDP. Midincome countries have similar life expectancies as high-income ones, and residents of some mid-income countries, like Costa Rica, report higher levels of satisfaction than high-income ones like the US or Hong Kong. Equality has a much stronger effect on societywide wellbeing than GDP. And, as the Harvard Adult Development study found, the greatest predictor of individual wellbeing is not income or class, but social relations. Economic contractions may negatively impact wellbeing if they lead to certain austerity measures, but not if they lead to lifestyle changes with positive dietary and health effects, or if they bring people closer together. Degrowth is not simply a contraction of the economy, it is a project of living meaningfully, enjoying simple pleasures, sharing and relating more with others, and working less, in more equal societies. Degrowth could improve wellbeing.

### AT: Welfare Turn---AT: Food

#### Degrowth solutions can sustain food consumption---Cuba proves

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Frequently Asked Questions,” The Case for Degrowth, Polity Press, 2020, pp. 110-129

13) Do your small-scale solutions scale up?

Some may, others will not. We call for more localized, community economies, not for everything to be produced small-scale or cooperatively. Decentralized, agroecological production requires more labor per unit of output compared to industrial agriculture, but also uses fewer chemicals and fossil fuels. Providing a greater percentage of a population’s food with community-supported agriculture interacts with other adjustments, including reducing food waste, eating less meat, and eating more seasonal and regionally grown produce. Community modes will likely continue to be complemented by more centralized production of goods such as grains and minerals. Smaller-scale alternatives complement and increase resilience. Urban gardeners cannot cover all nutritional needs, but they can cultivate a substantial share of seasonal vegetables, which would otherwise be transported from far away by planes or ships. Urban food gardens, for example, saved Cuba from a possible famine when the economy collapsed after the fall of the Soviet Union.16

### AT: Welfare Turn---AT: Healthcare

#### Degrowth contains costs---key to access

Giorgos Kallis 18, ICREA professor at ICTA, Autonomous University of Barcelona, “The Case for Degrowth,” Degrowth, 09/2018, Agenda Publishing

Welfare and public services True, a minimum level of output might be necessary for maintaining decent hospitals and schools. But that level is probably lower than that in rich countries today. Mid- to low-income countries like Cuba and Costa Rica have decent education and health provision. Consider life expectancy, which is a reasonable indicator of public health: life expectancy in mid-income countries is as high as in many high-income countries (Figure 4.6). There is also no reason why expenditure on health or education should perpetually grow at 2 or 3 per cent per year. Healthcare costs are increasing but this is often because of the privatization of hospitals, the liberalization of insurance and pharmaceuticals (often in the name of growth), the rising social costs of growth (pollution, stress, dietary changes), and healthcare inflation due to rising incomes. The costs of public health might be increasing because of growth, not despite of it.

#### Peak oil turns healthcare.

Michael Pennock et al. 15, Michael Pennock MASc is a population health epidemiologist based in Victoria, British Columbia, formerly the Research Director of the Population Health Research Unit at Dalhousie University, currently working with the BC Ministry of Health where he is responsible for the Population Health Surveillance and Epidemiology program; Blake Poland, PhD is Associate Professor at the Dalla Lana School of Public Health, University of Toronto, focused on the settings approach to health, the health of marginalised groups, and the sociology of tobacco control; Dr Trevor Hancock is a Professor of Public Health at the University of Victoria, “Resource Depletion, Peak Oil, and Public Health: Planning for a Slow Growth Future,” Geographies of Health and Development, 2015, edited by Isaac N. Luginaah and Rachel Bezner Kerr, Ashgate

The Club of Rome Revisited In 1968 an international think-tank of industrialists, scientists and politicians called the Club of Rome asked a group at the MIT to model the effects of major global trends on the health of the planet. The MIT group built a world computer model to investigate five major trends of global concern – accelerating industrialisation, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and a deteriorating environment. The results were published in the 1972 book entitled Limits to Growth (Meadows et al. 1972). Three general conclusions arose from the projections: 1. If the present growth trends in world population, industrialisation, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next 100 years. The most probable result will be a sudden and uncontrollable decline in both population and industrial capacity. 2. It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realise his or her individual human potential. 3. If the world’s people decide to strive for this second outcome rather than the first, the sooner they begin working to attain it, the greater will be their chances of success (Meadows et al. 1972). In 1992, the modellers published an update of their original projections and found the trends relatively unchanged (Meadows 2004). They stated that they would re-write the three basic conclusions as follows: 1. Human use of many essential resources and generation of many kinds of pollutants have already surpassed rates that are physically sustainable. Without significant reductions in material and energy flows, there will be in the coming decades an uncontrolled decline in per capita food output, energy use, and industrial production. Resource Depletion, Peak Oil, and Public Health 179 2. This decline is not inevitable. To avoid it two changes are necessary. The first is a comprehensive revision of policies and practices that perpetuate growth in material consumption and in population. The second is a rapid, drastic increase in the efficiency with which materials and energy are used. 3. A sustainable society is still technically and economically possible. It could be much more desirable than a society that tries to solve its problems by constant expansion. The transition to a sustainable society requires a careful balance between long-term and short-term goals and an emphasis on sufficiency, equity, and quality of life rather than on quantity of output. It requires more than productivity and more than technology; it also requires maturity, compassion, and wisdom. In 2008 Graham Turner at the Commonwealth Scientific and Industrial Research Organisation in Australia published a paper called ‘A Comparison of `The Limits to Growth` with Thirty Years of Reality’ (Turner 2008). It examined the extent to which the trends of the past 30 years were consistent with the Limits to Growth forecasts and concluded that changes in industrial production, food production and pollution are all in line with the book’s predictions of economic and societal collapse by the middle of the twenty-first century. In summary, the original forecasts produced by the MIT group which predicted a substantial collapse of the global ecosystem and economy during the mid-century period appear to be on track 30 years after they were generated. One of the key trends included in the MIT/Club of Rome analysis involved a sharp tightening of global energy supplies and this is the topic of the remainder of this chapter. Peak oil is a compelling and imminent example of a resource depletion issue that has profound environmental, economic and social implications. Although some effects will be potentially positive, many will be negative. As we argue below, the likely effects will include a reversal of historic post-industrial trends in globalisation, economic growth, travel, and availability and cost of both staples and luxury goods, a worsening of income inequalities, and negative impacts upon the social determinants of health. Although many of the scenarios which are sketched around peak oil are described by some in almost ‘doomsday’ overtones, a successful adaptation to the new reality of scarce and expensive oil could create a future which is also consistent with many of the characteristics of a healthy community: cleaner air, healthier lifestyles, improved food security, greater conviviality/ social capital and, possibly, improved economic security. The chapter will conclude with a brief discussion of the role that public health can play in facilitating a successful adaptation to this new world of resource scarcity. What is Peak Oil? The term ‘peak oil’ refers to the expectation that global oil production will reach a maximum or ‘peak’ at some point and then decline in subsequent years. This is not about the ‘end of oil’ but rather the point at which it cannot be extracted any faster. This usually happens when roughly half of the available reserve has been exploited, necessitating additional measures (e.g. injection of high pressure steam) to continue expected extraction rates. Since most of the largest oil fields in current production have already peaked, and they decline at a documented rate of 4–12 per cent (a rate that may increase over time) (Hook et al. 2009; UKERC 2009), this has necessitated chasing after more remote (and 180 Geographies of Health and Development expensive) sources (deep water, oil sands etc.). This cost issue is often expressed in terms of the amount of energy (expressed in barrels of oil) that is required to extract each barrel of oil, also known as ‘energy return on investment’ (EROI). Mature Saudi oil fields had an EROI of 1:100 for most of their pre-peak years. As the surface levels of those sources were extracted, the energy requirements increased to extract deeper reserves. By 1999 world production averaged out at 35 barrels produced for each barrel invested and the numbers continued to fall as new sources such as the tar sands produce only two to four barrels and shale production average five barrels for each barrel invested (Murphy and Hall 2010). The majority of new oil discoveries are in deep sea locations and the estimated cost of developing those sites is between $60 and $85 a barrel, compared to $20 for Saudi Arabian oil (Murphy and Hall 2011). History of Peak Oil In the mid-1950s, an American geologist named M. King H Hubbert developed a model which predicted that production from US oil fields would peak in the early 1970s (Bridges 2010; Hubbert 1956). Although his projections were widely rejected by his colleagues in the petroleum industry, his projection turned out to be remarkably accurate. This midway point became known as Hubbert’s Peak. Discussion about when the global Hubberts Peak would occur have been numerous and passionate. The estimated dates, from various sources are presented in Table 11.1 (Based on Frumkin, Hess and Vindigni, 2009, with more recent sources added). The more recent estimates seem to cluster around 2015–2020 or out to 2030, although some suggest there will be no peak. Fatih Birol, the Chief Economist of the International Energy Agency, stated in an April 2011 interview on the Australia Broadcasting Corporation that the IEA believed that world oil production had peaked in 2006: On the one hand we have this pressure on the demand side, but when we look at the production side the prospects are a little bleak. We think that the crude oil production has already peaked in 2006, but we expect oil to come from the natural gas liquids, the type of liquid we have through the production of gas, and also a bit from the oil sands. But in any case it will be very challenging to see an increase in the production to meet the growth in the demand, and as a result of that one of the major conclusions we have from our recent work in the energy outlook is that the age of cheap oil is over. We all have to prepare ourselves, as governments, as industry, or as a private car driver, for higher oil prices. (Birol 2011) The concept, reality, and timing of peak oil have been hotly debated since Hubbard’s first formulation, and understandably so given the centrality of cheap oil to the global economy and the ramifications that the end of cheap oil would have on globalisation. Accurate projections of remaining supplies are complicated by uncertainties in estimating the size of reserves, economic and political pressures to over-estimate the size of known reserves (e.g. OPEC production quotas are tied to reserve size, as are oil company share values), and the sheer complexity of the field. Moreover, production rates depend not only on underlying geology but also drilling techniques, production quotas, and political developments (insurgency, local unrest, sanctions). More recently, it has been suggested that new developments in ‘fracking’ for shale oil has altered the picture significantly, with some claims being made that peak oil is postponed indefinitely or that the US will soon emerge as a global energy superpower and net exporter (Ungar 2012; McClanahan 2012; Cohen 2013). On the other hand, detailed analysis of existing fracking wells reveal high annual depletion rates- with observed rates between 33 per cent (Biermann 2012) and 52 per cent (Hughes 2012) – well above the 4–10 per cent reported for conventional oil fields, such that growth in production can only be achieved with exponential increases in drilling rates (Whipple 2012). With these more recent developments in mind, then, we make two crucial observations. On balance, it seems that most analysts accept that there will be a peak to oil production, and that it will come in the next 10–15 years. But that may not be – indeed probably is not – the key issue. There are two other aspects of the argument that are more important than deciding when/if peak oil will arrive. • First, peak oil is not so much a peaking of supply or production as it is the end of the era of cheap oil. Since globalisation requires not just oil but cheap oil, the ramifications are significant, regardless of when peak production (which will only be evident in hindsight) occurs. The development of deepwater, arctic and tar sands sources despite a weak economy suggests the end of cheap oil is upon us, as many of these new sources are only economical at $80+/barrel. The implications for the global economy are profound. • Second, as McKibben (2012) and others have made clear, even if there was no peak oil, we are fast approaching – and may already be past – the peak of oil production (and fossil fuel production more generally) that the planet can tolerate. It has been estimated that we cannot burn more than another 565 gigatons of carbon dioxide if we are to stay below the 2°C of warming that is the target upper limit for global warming, but it is also estimated that the fossil fuel corporations now have 2,795 gigatons in their reserves, or five times the allowable upper limit (Carbon Tracker Initiative 2012). And they have no intention of leaving it unburned. Put simply, we’re beyond the era of cheap or limitless oil and other fossil fuels, because even if oil, coal and gas were limitless, we need peak oil, because we can no longer afford (environmentally) to exploit remaining known reserves. However, as Hopkins (2008) points out in The Transition Handbook, although we might ‘need’ peak oil, the likelihood is that without a clear societal commitment and plan to transition to a low-carbon future, the response to peak oil is likely to be to chase whatever alternative fossil fuel reserves we can get – and many of these, like coal, are going to exacerbate climate change. Thus so-called ‘solutions’ to peak oil can exacerbate climate change and so the response must be a coordinated one on both fronts, one that deals with the economic, political, social, and distributive impacts of a fossil-fuel-constrained future alongside the ecological impacts of the damage we’ve already wrought – and will continue to wreak, because it will take us decades of continued fossil fuel use to make the transition. The Health-related Implications of Rising World Oil Prices The debate about the actual date of the global Hubbert’s Peak, although interesting, is less important than the implications for energy prices. Regardless of when the actual peak takes place, it is expected that prices will rise and, in the short term, become more volatile as the peak is approached and continue to rise thereafter. As reflected in the figure below, world oil prices have behaved in recent years in a way that is consistent with the peak oil theory. Prices rose dramatically after 2005 as a result of increased costs of production coupled with the impact of increasing demand from China and India. They reached a peak of $140 a barrel at the start of the current recession, and it has been suggested that these prices were the underlying cause of the recession (Rubin 2009). Further, it is suggested that in this close relationship between energy prices and economic performance, the spare capacity required to fuel a global economic ‘recovery’ no longer exists, and that globalisation (itself highly dependent on cheap oil) is in question (ibid.). It’s unlikely that we can continue to fill Dollar Stores and Walmarts in North America with items produced in China when shipping costs outweigh the actual dollar value of the items themselves. The effects of these rising prices are expected to be widespread and profound given the widespread use of petroleum as both an energy source and an input into the many products of the petrochemical industry, such as plastics and fertilisers. Widespread inflation is anticipated, particularly in food prices, heating, transportation, fertilisers and all plastic products. Some industries, such as tourism and airlines will be particularly hard hit and some analysts, such as former CIBC world markets chief analyst Jeff Rubin have argued that the world economy will be in danger of entering a long period of stagflation (ongoing recession accompanied by high levels of inflation) (Rubin 2009). Not all of the consequences will be negative. An era of high energy prices could decrease the quantity of CO2 produced into the atmosphere as individuals are forced to reduce their consumption. In essence, Peak Oil will accomplish the goals of a carbon tax by decreasing the supply of energy (and thus increasing its price) to the point where individuals are forced to conserve. Rubin (2009) has argued that rising energy prices will bring an end to globalisation by dramatically increasing the transportation costs of bringing goods to market, but that this will also boost local production. However, none of this is a foregone conclusion. It’s just as possible that rising oil prices will press more coal into production, not only for electricity production, but also in terms of large-scale coal ‘gasification’ projects, and/or make oil extraction from tar sands or through fracking more economical. The potential for a catastrophic increase in Greenhouse Gas emissions from coal at a time when we are already perilously close to major climatic tipping points, should not be underestimated. In recent years the implications of increasing energy prices on health has received increased attention from within the public health community. In March 2008, the US Figure 11.1 Crude Oil Prices 1861–2011 (2011 US Dollars) Source: BP Statistical Review of World Energy June 1012; http://www.bp.com/statisticalreview. 184 Geographies of Health and Development Centers for Disease Control and the Johns Hopkin School of Public Health sponsored a symposium on the subject, and three prominent public health journals in the UK and the US have devoted special issues to the topic (Public Health 2008, Public Health Reports Jan–Feb 2008; and the American Journal of Public Health September 2011). The Canadian public health community has been slower to respond. No articles on the topic have appeared in the Canadian Journal of Public Health, although a number of Canadian health researchers have been addressing peak oil in other venues (Poland and Dooris 2010; Spady and Gagnon 2010; Hancock 2011; Poland et al. 2011) and Canadians were early prominent voices on these issues outside of the health sector (e.g. Homer-Dixon 2006; Rubin 2009). The remainder of this chapter will discuss some of the implications of peak oil that have been identified for the health care system and for population health. We conclude that the most profound effects will be on income equity and the social determinants of health and that will require meaningful mitigation through effective social policies. We highlight potential roles that the public health sector can play in facilitating an effective adaptation to this particular expression of resource scarcity in fossil fuels. As such, these discussions can illuminate the potential role of the sector in facilitating successful transitions to a future of slower growth and diminished supplies of a variety of natural resources. Peak Oil and Environmentally Responsible Health Care As large-scale consumers of fossil-fuel energy for uses such as heating, transportation and electrical equipment, lighting etc., health care providers will experience the inflationary impact of peak oil. The sector is also a major consumer of plastics, as the majority of modern anti-septic practices have come to rely on disposable plastic materials, including tubing, syringes and gloves. In addition, many medications are developed from petroleumbased products, including aspirin, many antihistamines, antibiotics, antineoplastics, and psychoactive drugs. Petroleum-based products are also used for tablet binders and pillcoatings. Hospitals are substantial users of energy. A Natural Resources Canada study in 2003 concluded that Canadian hospitals consumed as much energy as 450,000 households (Natural Resources Canada 2003). The upward pressure on health care costs which will result from escalating energy prices will occur at a time when governments are facing other revenue and expenditure challenges which are associated with the cost increases and an economy in decline. Based on past performance in the US, Hess, Bednarz, Bae and Pierce (2011), estimated that a 1 per cent increase in monthly fuel oil prices would result in a 0.03 per cent increase in monthly medical care prices with an 8 month time lag. Thus a doubling in fuel prices would result in a 3 per cent increase in medical costs.

### AT: Welfare Turn---AT: Life Expectancy

#### Degrowth improves aggregate health.

Giorgos Kallis 18. ICREA professor at ICTA, Autonomous University of Barcelona. 09/2018. “The Case for Degrowth.” Degrowth, Agenda Publishing.

Life expectancy has increased over time and is higher in richer countries. But the relationship is gamma shaped: among those countries that have a sufficiently high level of income, there are no discernible differences in life expectancy between richer and less rich countries (Figure 4.6). Among rich countries, it is not more income that determines life expectancy but equality (Wilkinson & Pickett 2011). [[FIGURE 4.6 OMITTED]] In a country where life is short, life is not good. But it does not follow from this that the more old people a country has, the better life is. There is no objective reason why living longer than, say, 70 or 80 years marks an improvement in well-being. Living longer is not a sign of social improvement if older people cannot enjoy their lives, due to health problems or lack of resources. High life expectancy can be sustained at lower levels of output than those of rich countries (Figure 4.6). Life expectancy at age 5 was as high in mid-Victorian Britain as it is today (Clayton & Rowbotham 2009). Life expectancy improved because of improvements in child mortality rates, due to better hygiene and public health, but it is not necessary to have more and more growth to sustain good infant care (Smaje 2015). The incidence of degenerative disease in Victorian Britain was 10 per cent of ours today because of better eating and more physical activity (Clayton & Rowbotham 2009). Data from 122 countries finds that the incidence rates for all types of cancer increase linearly with per capita income, even after controlling for ageing populations, improvement in cancer detection and omitted variables (Luzzati & Rughi 2018). Growth also has negative short-term health effects. A study of 100 birth cohorts in 32 countries has shown that mortality increases during economic booms, probably because of pollution to which children are vulnerable and because of increased alcohol consumption (Cutler et al. 2016). Recessions in the United States reduce health-related fatalities among children (Ruhm 2000). Health-damaging behaviours are more likely to decline in a recession, while health-promoting ones follow idiosyncratic paths - all return to trend after the recession, with the notable exception of binge drinking (Asgeirsdottir et al. 2016).

### AT: Welfare Turn---Degrowth Solves

#### Personal fulfillment does not require absolutely high levels of consumption---if people observe gradual improvement in ecological improvement, it can be maintained with an ELR.

Hendrik Van Den Berg 18, Professor Emeritus at the University of Nebraska, and continues teaching at Mount Holyoke College in Massachusetts, “Getting Serious About the Limits to Growth: ELR and Economic Restructuring Under Decroissance: Macroeconomic Policy and Environmental Realities: Can We Have Full Employment Under Decroissance?,” Full Employment and Social Justice, edited by Michael J. Murray and Mathew Forstater, Springer International Publishing, 2018, pp. 83–108 DOI.org (Crossref), doi:10.1007/978-3-319-66376-0\_4

It is also important to keep in mind that happiness and satisfaction with life are complex phenomena, not easily defined in terms of fixed functions. There is ample evidence showing that people like manageable and predictable changes that improve their personal well-being relative to what they recently experienced, regardless of the point they start from. For example, in one behavioral study workers were given the choice of earning the same real wage every year of their lives, experiencing gradually increasing wages that average out to the same real level as the constant lifetime wage, or gradually decreasing wages that average out to the same real level as the constant lifetime wage.10 The majority selected the rising wage option even though it meant starting with a lower wage. Economists found the majority’s choice surprising because standard economic theory mandates discounting future earnings relative to current earnings, and discounting the future means the constant and decreasing wages provided higher present values of lifetime income compared to a rising wage that starts with a below-average wage. Aside from the implication that the standard economic practice of discounting future income may not be appropriate for making decisions that maximize long-run human happiness, it appears that people would like to see things getting better over time. These results suggest that people may not be as short-run oriented as some studies suggest. Perhaps it may not be so difficult to convince people that we should alter the way we live and work in order to reduce the strong likelihood that the future will provide us with a much less happy existence, especially if ELR eliminates the threat of unemployment.

#### This eliminates welfare loss from degrowth

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Four – Secrets of the Good Life,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 152-182

Flourishing without growth

All this amounts to excellent news. It means that upper-middle income and high-income nations – countries over the threshold of $10,000 per capita – could in theory deliver flourishing lives for all, achieving real progress in human development, without needing any additional growth in order to do so. We know exactly what works: reduce inequality, invest in universal public goods, and distribute income and opportunity more fairly.

What’s exciting about this approach is that it also has a direct positive impact on the living world. As societies become more egalitarian, people feel less pressure to pursue ever-higher incomes and more glamorous status goods. This liberates people from the treadmill of perpetual consumerism. Take Denmark, for example. Consumer research shows that because Denmark is more equal than most other high-income countries, people buy fewer clothes – and keep them for longer – than their counterparts elsewhere. And firms spend less money on advertising, because people just aren’t as interested in unnecessary luxury purchases.21 This is one of the reasons why more egalitarian societies turn out to have lower levels of per capita emissions, when correcting for other factors.22

But reducing inequality reduces ecological impact in more direct ways too. Rich people have a much higher ecological footprint than everybody else. The richest 10% of the world’s population are responsible for almost half the world’s total lifestyle carbon emissions. In other words, the global climate crisis is being driven largely by the global rich. And things become even more lopsided as we climb the income ladder. The richest 1% emit thirty times more than the poorest 50% of the human population.23 Why? It’s not only because they consume more stuff than everybody else, but also because the stuff they consume is more energy-intensive: huge houses, big cars, private jets, frequent flights, long-distance holidays, luxury imports, and so on.24 And if the rich have more money than they can spend, which is virtually always the case, then they invest their excess in expansionary industries that are quite often ecologically destructive.

This leads us to a simple but radical conclusion: any policy that reduces the incomes of the very rich will have a positive ecological benefit. And because the excess incomes of the rich win them nothing when it comes to welfare, this can be accomplished without any cost to social outcomes. This position is widely shared among researchers who study this issue. The French economist Thomas Piketty, one of the world’s leading experts on inequality, doesn’t mince his words: ‘A drastic reduction in purchasing power of the richest would therefore in itself have a substantial impact on the reduction of emissions at global level.’25

There are also ecological benefits to be reaped from investing in public services. Public services are almost always less intensive than their private equivalents. Britain’s National Health Service, for instance, emits only onethird as much CO2 as the American health system, and delivers better health outcomes in the process. Public transportation is less intensive in terms of both energy and materials than private cars. Tap water is less intensive than bottled water. And things like public parks, swimming pools and recreational facilities are less intensive than everyone buying bigger yards, private pools and personal gym equipment. Plus, it’s more fun. If you visit Finland, you’ll find a whole society that thrives on the conviviality of public saunas – it’s a national pastime that plays a big role in making Finland one of the happiest countries in the world.26

Shared public goods also take pressure off people’s need for private income. Take the United States, for example. Americans are under extraordinary pressure to work ever-longer hours and pursue ever-higher incomes, because the cost of accessing basic goods like healthcare and education is not only outrageously high, but constantly rising. Decent health insurance can be prohibitively expensive to buy, and the cost of deductibles and copayments is often enough to sink people into debt for their whole lives. Health insurance premiums have nearly quadrupled since 2000.27 As for education, a family with two kids can expect to pay up to half a million dollars just to put them through college – almost 500% more than in the 1980s.28 These prices have nothing to do with the ‘real’ cost of healthcare and education: they are an artefact of a system organised around profit.

Now, consider this: if the US were to transition to a public health and education system, people would be able to access the goods they need to live well for a mere fraction of the cost. Suddenly they would be under much less pressure to pursue high incomes just in order to get by.

### AT: Welfare Turn---Degrowth Solves---JG

#### It won’t cause unemployment---each person would work less. This creates time for leisure and reduces environmental pressures while well-being is protected through welfare.

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Five – Pathways to a Post-Capitalist World,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 152-182

But what about jobs?

Now, here’s where things get tricky. The policies I’ve suggested above are likely to reduce total industrial production. This might be OK from the perspective of human needs (none of us would be worse off if our smartphones lasted twice as long), but it does leave us with a difficult question. As products last longer, as we shift to sharing things, and as we slash food waste and scale down fast fashion, employment in these industries will decline and jobs will disappear across the supply chains. In other words, as our economy becomes more rational and efficient, it will require less labour.

From one perspective, this is fantastic news. It means that fewer lives will be wasted in needless jobs, producing and selling things that society doesn’t actually require. It means liberating people to spend their time and energy on other things. But from the perspective of the individual workers who will be laid off from these jobs, it is a disaster. And governments will find themselves struggling to cope with unemployment.

This might seem like an impossible bind; and indeed it’s one reason why politicians consider degrowth to be so unthinkable. But there’s a way out. As we shed unnecessary jobs we can shorten the working week, going from forty-seven hours (the average in the United States) down to thirty or perhaps even twenty hours, distributing necessary labour more evenly among the working population and maintaining full employment. We can facilitate this process by introducing a job guarantee (a policy that happens to be resoundingly popular23 ), and roll out retraining programmes so that people laid off from shrinking industries can transition easily to others (renewable energy, public services, maintenance, etc.). This approach would allow everyone to benefit from the time that’s liberated by reducing material throughput. It’s an essential part of any degrowth strategy.

The exciting part is that reducing working hours has a substantial positive impact on people’s well-being. This effect has been demonstrated over and over again, and the results are striking. Studies in the US have found that people who work shorter hours are happier than those who work longer hours, even when controlling for income.24 When France downshifted to the thirty-five-hour week, workers reported that their quality of life improved.25 An experiment in Sweden showed that employees who reduced their working time to thirty hours reported improved life satisfaction and better health outcomes.26 Data also shows that shorter hours leave people feeling more satisfied with their jobs, boosting morale and happiness.27 And – perhaps best of all – shorter hours are associated with greater gender equality, both in the workplace and at home.28

Some critics worry that if you give people more time off they’ll spend it on energy-intensive leisure activities, like taking long-haul flights for holidays. But the evidence shows exactly the opposite. It is those with less leisure time who tend to consume more intensively: they rely on high-speed travel, meal deliveries, impulsive purchases, retail therapy, and so on. A study of French households found that longer working hours are directly associated with higher consumption of environmentally intensive goods, even when correcting for income.29 By contrast, when people are given time off they tend to gravitate towards lower-impact activities: exercise, volunteering, learning, and socialising with friends and family.30

These effects play out across whole countries. For instance, researchers have found that if the United States were to reduce its working hours to the levels of Western Europe, its energy consumption would decline by a staggering 20%. Shortening the working week is one of the most immediately impactful climate policies available to us.31

But perhaps the most important part about shortening the working week is that it frees people to spend more time caring – be it nursing a sick relative, playing with children, or helping regenerate a woodland. This essential reproductive work (most of which is normally done by women) is totally devalued under capitalism; it is externalised, unpaid, invisible and unrepresented in GDP figures. Degrowth will free us to reallocate labour to what really matters – to things that have real use-value. Care contributes directly to social and ecological well-being, and caring has been shown to be more powerful than material consumption when it comes to improving people’s sense of happiness and meaning, vastly outstripping the dopamine hit we might get from a shopping binge.

The benefits of a shorter working week keep multiplying. One group of scientists summed up the evidence like this: ‘Overall, the existing research suggests that working time reduction potentially offers a triple dividend to society: reduced unemployment, increased quality of life, and reduced environmental pressures.’32 Transitioning to a shorter working week is key to building a humane, ecological economy.

### AT: Welfare Turn---Sustainability Turns

#### Subjective well-being cannot be sustained under an ecologically destructive growth paradigm.

Hendrik Van Den Berg 18, Professor Emeritus at the University of Nebraska, and continues teaching at Mount Holyoke College in Massachusetts, “Getting Serious About the Limits to Growth: ELR and Economic Restructuring Under Decroissance: Macroeconomic Policy and Environmental Realities: Can We Have Full Employment Under Decroissance?,” Full Employment and Social Justice, edited by Michael J. Murray and Mathew Forstater, Springer International Publishing, 2018, pp. 83–108 DOI.org (Crossref), doi:10.1007/978-3-319-66376-0\_4

Another concern related to the arguments made in this paper is that the reduction in material output will actually reduce human well-being because other forms of production such as social activity, maintaining the commons, and providing education cannot replace the benefits of material consumption. With regard to this issue, Amartya Sen is well-known for linking human well-being to economic growth in that economic growth gives people more choices. Sen (1985) argues that freedom from poverty and depravation depend on the extent that people have choices to escape from their poverty or depravation. He thus argues that economic growth provides for people’s basic needs and offers different people more than one way to satisfy those needs. Sen’s framework, known as the capabilities approach to development, redefines economic development in terms of capabilities, which are achieved by means of the growth of production. At first glance it appears as though environmental restrictions on growth thus reduce economic development. However, environmental degradation also reduces choices and freedom. When the natural commons are destroyed, natural resource flows dwindle, and production costs rise freedom-enhancing development also slows.

## Solvency

### Mechanism---2AC

#### A Job Guarantee powered by Modern Monetary Theory would be nationally funded, locally administered, and entirely self-regulating in response to economic currents.

Steven Hail 22, Economist and Lecturer, Modern Money Lab; Adjunct Associate Professor at Torrens University Australia; Author of Economics for Sustainable Prosperity, “Paying for a Green New Deal: An Introduction to Modern Monetary Theory,” Sustainability and the New Economics: Synthesising Ecological Economics and Modern Monetary Theory, edited by Stephen J. Williams and Rod Taylor, Springer International Publishing, 2022, pp. 279–302, Springer Link, doi:10.1007/978-3-030-78795-0\_14

8 A Government Job Guarantee Scheme

A monetary-sovereign government can permanently eliminate involuntary unemployment via a job guarantee scheme, thus achieving true full employment (Minsky 2013): that is, 1% or 2% unemployment and zero underemployment. It is hard to think of a more important policy innovation, given the destructive nature of unemployment and poverty (Tcherneva 2020).

A job guarantee involves the offer of a full- or part-time public sector job to anyone not otherwise in full-time employment who chooses to take up the offer, at an equitable base wage, with decent working conditions designed to set the floor for acceptable employment conditions elsewhere in the economy. Such a job guarantee would be funded by the national government, but administered locally, to meet local needs. Those needs would centre around caring for the environment and the community, while not competing with private firms. The job guarantee would also be separate from the regular public service. There is no shortage of ideas about suitable activities that could be incorporated into a job guarantee program. There are many useful tasks which are not currently being undertaken, as they are not profitable for the private sector and cannot under current arrangements be funded by local governments.Footnote12

Job guarantee spending would act as a superior cyclical stabiliser to our current system. In a downturn, people who had lost their jobs in the private and conventional public sectors would be able, if they chose, to join the job guarantee. The income they received as part of the job guarantee would support their spending, and therefore the local economy, and push the government budget further into deficit, just as this became necessary. Moreover, this would happen with no policy lag, and without any bureaucrats having to forecast and plan for a downturn in advance. In a recovery, people would transition from the job guarantee into better-paid jobs elsewhere in the economy, which would reduce the size of the deficit when it was appropriate to do so.

Meanwhile, those who would otherwise have become unemployed would have had the opportunity to remain in employment, carrying out socially productive and rewarding tasks, with the opportunity, but not the obligation, to engage in training in areas of local skill shortages and to be matched with potential employers, while in the program.

A job guarantee is nothing like compulsory schemes where people are forced to work for unemployment benefits. It is far from ‘work for the dole’. It would be optional, providing a real work opportunity, rather than an obligation, to anyone who was unemployed. A job guarantee was discussed widely as part of the US 2020 presidential election campaign. Proposals have existed for such a scheme in Australia for many years (Cook et al. 2008). A large-scale job guarantee-like program has operated in India since 2005 (Kareemulla et al. 2013), and there have been a number of other successful public sector employment schemes with some of the features of the MMT job guarantee introduced around the world in the relatively recent past (Tcherneva 2012; Kaboub 2007).

While there is no ‘one size fits all’ job guarantee which could apply in every country, and while there would be variations in the jobs performed even in different parts of a single country, should such a scheme be introduced, the MMT job guarantee has certain essential features:

It is a permanent scheme, and not a temporary crisis measure.

It hires mostly those with less education and skills, at a wage that allows for full participation in society.

It is available to all, compulsory for none, and allows the otherwise unemployed to remain and work in their local communities.

It is scalable – growing and shrinking counter-cyclically.

It stabilises the economy across the economic cycle, acting as an inflation anchor.

The appropriate level of the fiscal deficit to bring about non-inflationary full employment is determined by the number of people who walk into a job guarantee office and take up a place in the program.

It is an essential feature of any policy program aimed at combining social justice with ecological sustainability (Forstater 2003).

### Mechanism---Administrable

#### AT: can’t administer

Mark Paul et al. 18, Mark Paul is a postdoctoral associate at the Samuel DuBois Cook Center on Social Equity at Duke University; William Darity Jr. is Samuel DuBois Cook Professor of Public Policy, African and African American Studies, and Economics, and director of the Samuel DuBois Cook Center on Social Equity at Duke University; Darrick Hamilton is associate professor of economics and urban policy at the Milano School of International Affairs, Management and Urban Policy and Department of Economics, New School for Social Research, and director of the doctoral program in public and urban policy at the New School; Khaing Zaw is a research associate at the Samuel DuBois Cook Center on Social Equity at Duke University, “A Path to Ending Poverty by Way of Ending Unemployment: A Federal Job Guarantee,” RSF: The Russell Sage Foundation Journal of the Social Sciences, vol. 4, no. 3, Russell Sage Foundation, 2018, pp. 44–63

DEBUNKING COMMON CRITICISMS

The FJG is one of many potential poverty alleviation programs; however, we believe the FJG offers unique payoffs by working toward building a just and inclusive economy through a full employment economy. To ensure that the FJG is a viable program, in this section we respond to five of the common criticisms lodged against programs of this type. What type of work will people actually do? Why not just adopt a universal basic income guarantee (UBI)? How do [End Page 53] we elicit effort if people cannot be fired? Would such a program be prohibitively expensive? Would the program hurt small businesses? Each of these is addressed in turn.

What Type of Work Will People Actually Do?

What type of socially useful work could the members of the NIEC engage in? During the Great Depression, the WPA, created by Executive Order 7034 by President Franklin Roosevelt, employed more than 8.5 million workers from 1935 to 1943. In November 1938, at peak program size, it employed 3.3 million Americans, an estimated 6.5 percent of the nation’s labor force (Hansan 2013). The program assisted these hardworking Americans during times of distress, providing them with the dignity of work and the ability to put food on the table and meet necessary bills. How much did these workers accomplish? Just to name a few: 650,000 miles of new or improved roads; 124,000 new or improved bridges; 39,000 schools built, improved, or repaired; 85,000 public buildings built, improved, or repaired (excluding schools); 8,000 new or improved parks; 4,000 new or improved utility plants; 16,000 miles of water lines installed; 950 airports or airfields built, improved, or repaired; 1,500 nursery schools operated; 2,300 personal accounts of slavery gathered; 225,000 concerts performed.

Similar to their counterparts in the WPA, workers in the NIEC could repair, maintain, and build the nation’s deteriorating infrastructure, retrofit our buildings—aiding in a green energy transition, saving homeowners and renters money, reducing our carbon footprint—provide free or low-cost, high-quality preschool and after-school services, function as teacher’s assistants in the classroom, engage in community development projects, reinvest in our nation’s parks, rejuvenate our defunded postal service, as well as perform other socially and economically rewarding tasks.

In 2013, the American Society of Civil Engineers released their Report Card for America’s Infrastructure, giving the country’s crumbling infrastructure a D+ grade (ASCE 2013). More recently, the ASCE reported that the U.S. economy needs $3.32 trillion in funding to address its infrastructure gap and ameliorate public safety concerns, $1.44 trillion of which is not currently funded. They project that failure to act on America’s crumbling infrastructure would result in $7 trillion in lost business sales by 2025 (ASCE 2016). Furthermore, they estimate that if the infrastructure gap is not closed, between 2016 and 2025 it could cost the U.S. economy $3.9 trillion in lost GDP, $7 trillion in lost business sales, and 2.5 million jobs. Overall, they conclude that the average household will lose $3,400 in disposable income per year if the deficiency remains unaddressed.

Economists have expressed concern about the slowdown in the growth of productivity in our economy (Syverson 2016), yet we know that large-scale investment in infrastructure—both physical and human—can have a measurable impact on capacity by increasing available resources and enhancing the productivity of existing resources (Munnell 1992; Heintz, Pollin, and Garrett-Peltier 2009). The FJG would be able to adequately address these needs and more, alleviating these costly and unnecessary shortcomings in the economy.

To make the best use of the labor available through the FJG program, states, counties, and municipalities can conduct an inventory of their needs and develop a jobs bank. The program could give priority to the most urgent projects to aid the most distressed communities. Although we highlight some investment opportunities that are needed now—such as retrofitting our buildings and heavily investing in our infrastructure—the jobs bank, managed through the NIEC, would function as a constantly updating dynamic entity, shifting with local, state, and federal needs.23

Under the FJG, many additional services would be provided to Americans, resulting in an increase in discretionary income and improvements in quality of life. Some of those services will address the nation’s human infrastructure needs. These will include the provision [End Page 54] for childcare and eldercare.24 Some care providers will be trained to deliver services to persons with special needs. The current exorbitant cost of childcare is a major obstacle for many parents, restricting their access to the labor market and greatly exacerbating inequality in access and opportunity for children. A recent report from the Economic Policy Institute, found that childcare is more expensive than a college education in many states (Bivens 2016). Robert Lynch and Kavya Vaghul estimate that universal high-quality pre–K education would yield an estimated $10 billion annually in benefits from 2016 to 2050 while providing greater access to high-quality educational services (2015).25 Solidifying high-quality universal pre–K education, childcare, adult care, and elder care across the United States would all result from a federal job guarantee that includes provisions for human infrastructure investment. Although our proposal is facially gender neutral, it has basic elements that could disproportionately benefit women. This would greatly ease time and financial burdens borne disproportionately by women.

Some opponents of the FJG argue that if the market is not currently providing these jobs, then the government has no reason to do so. For example, according to Guy Standing, “a job guarantee is a form of subsidy, in that it involves a payment for doing something for which there is no proven market demand. Unlike a universal unconditional transfer, all labour subsidies involve both substitution effects and deadweight effects” (Standing 2013).

In our economy, we can find numerous examples of unfulfilled voids by the private sector where the government has had to step in to provide necessary and socially beneficial services through additional employment and investment. The core purpose of federal taxation and expenditure is to provide the American people with the government services and public goods.

For instance, prior to the American Civil War, the United States did not have a government-run public fire department (Tebeau 2012). Instead, fire departments were private or organized solely on a volunteer basis, at times leaving poor houses and neighborhoods to burn, and the well-to-do were privy to what is today a public good with potential spillover calamity—adequate fire protection. Without government spending, production of public goods will be inadequate, resulting in socially inefficient outcomes.

From our perspective, the government has a public goods and equity role to fill gaps where the market fails—and there are plenty of cracks and canyons to be addressed. We believe that a wide range of socially useful jobs can be filled by the ranks of the unemployed with the assistance and coordination of the NIEC. After all, children are undereducated, too few have adequate medical care, greater care and service is needed for our elderly, our parks are under-staffed and underutilized, and our nation’s transportation infrastructure is inadequate. Some of these jobs can be countercyclical, like infrastructure investment, and others can function as a permanent expansion of government services, such as universal preschool.

### Mechanism---Growth Version

#### Solvency card 2 w/ growth version

L. Randall Wray et al. 18, L. Randall Wray and Pavlina R. Tcherneva are both affiliated with the Levy Economics Institute of Bard College; Flavia Dantas is associated with the State University of New York at Cortland; Scott Fullwiler is linked to the University of Missouri–Kansas City; Stephanie A. Kelton is associated with both Stony Brook University and the Levy Economics Institute of Bard College, “Public Service Employment: A Path to Full Employment,” Levy Economics Institute of Bard College, 04/2018, pp. 52, http://pinguet.free.fr/psefull18.pdf

Despite headline-grabbing reports of a healthy US labor market, millions of Americans remain unemployed and underemployed. It is a problem that plagues our economy in good times and in bad—there are never enough jobs available for all who want to work. The problem is most acute for women, youths, blacks, and Latinos, although research also finds a persistent lack of employment for large numbers of working-age men. This report asks a set of big questions: What if we sought to eliminate involuntary unemployment across all demographic groups and geographic regions, by directly creating jobs in the communities where they are needed through a federally funded Public Service Employment program? How could such a radical transformation of the labor market be implemented? What would it cost, and what would it mean for the US economy?

A number of important implications emerge from this analysis. Joblessness, defined as the inability to secure a job at a living wage ($15 per hour), can be eliminated in every corner of America for every eligible person who desires to work. With a standing job offer—a “public option”—available at all times, the US labor market would transition to a permanent state of true full employment. Millions of American families would be lifted out of poverty, and the economy would grow as the benefits of the program spill over into the private sector. Perhaps most astonishingly, this can all be done without the need to raise taxes and without creating an inflation problem.

We propose the creation of a Public Service Employment (PSE) program that would offer a job at a living wage to all who are ready and willing to work. This is a “job guarantee” program that provides employment to all who need work by drawing from the pool of the otherwise unemployed during recessions and shrinking as private sector employment recovers. Federally funded but with a decentralized administration, the PSE program would pay $15 per hour for both full- and part-time positions and offer benefits that include health insurance and childcare. In addition to guaranteeing access to work on projects that serve a public purpose, the PSE program establishes effective minimum standards for wages and benefits.

We have simulated the economic impact over a tenyear period of implementing the PSE program beginning in 2018Q1. Drawing from the unemployed, underemployed, and those who are out of the labor force, the program would attract roughly 15 million people into the PSE workforce, based on our higherbound estimates of likely program participants. While the report also presents lower-bound estimates, the results highlighted here correspond to this higherbound scenario:

 Real, inflation-adjusted GDP (2017Q4 dollar values) would be boosted by $560 billion per year on average, once the PSE program is at full strength (from 2020 to 2027).

 The economic stimulus generated by the PSE program would also increase private sector employment by up to an additional 4.2 million private sector jobs relative to the baseline, due to the “multiplier effects” of the program.

 Even though it boosts GDP by over $500 billion per year, adds more than 19 million private and public service jobs, and raises wages nationwide above $15 per hour, the program’s impact on inflation is minor: the boost to inflation peaks at 0.74 percentage points higher than the baseline projection and then progressively falls to a negligible 0.09 percentage points higher than the baseline by the end of the simulation period.

 The program’s net impact on the federal budget averages 1.53 percent of GDP in the first five years of the program (2018–22) and 1.13 percent of GDP in the last five years (2023–27). These net budgetary impacts could be significantly overestimated, since the simulation makes very cautious assumptions about offsetting reductions in Medicaid and Earned Income Tax Credit (EITC) expenditures that would result from higher employment and wages.

 State-level government budgets are improved by a total of $53 billion per year by boosting employment and growth.

 Based on the demographics of estimated PSE participants, the program would disproportionately benefit women and minorities.

 One full-time worker in the PSE program could lift a family of up to five out of poverty. With one full-time and one part-time worker, a family of eight could rise above the poverty line.

 In addition to these measured benefits, the PSE program would lower spending by all levels of government, as well as by businesses and households, on a range of costly problems created by unemployment. It is possible that the program would “pay for itself” in terms of savings due to reduced crime, improved health, greater social and economic stability, and larger reductions in Medicaid and EITC expenditures than those assumed in the simulations.

 The projects undertaken in every community would provide visible benefits, meeting specific local needs through work that involves caring for people, strengthening communities, and protecting and renewing the environment. This report develops a blueprint for the design, jobs, and implementation of the PSE proposal for the United States.

Unemployment, hidden and official, with all of its attendant social harms, is a policy choice. The results in this report lend more weight to the argument that it is a policy choice we need no longer tolerate. True full employment is both achievable and sustainable.

Introduction

This report examines the economic effects of implementing a nationwide job creation program. In this section, we first provide a brief overview of the goals and structure of the proposal, which would create millions of new jobs at a living wage in a new program that we call Public Service Employment (PSE). We then turn to a summary of the major findings regarding the economic effects of such a program.

Goals and Structure of the Proposed Program

We see the PSE program as part of a restructuring of the economy that represents a radical departure from the neoliberalism that has dominated national policy for the past four decades. Neoliberal doctrine has resulted in stagnant wages, chronically high unemployment, declining labor force participation among prime-age male workers, rising inequality that already exceeds the levels achieved during America’s notorious “Gilded Age,” and an explosion of household debt. Other key initiatives in this restructuring include calls for a national infrastructure investment plan, the movement to eliminate student debt (see Fullwiler et al. 2018), proposals to create “Medicare for All,” and the push to raise minimum wages to $15 per hour.

The PSE program would play a complementary role by offering paid work at a living wage of $15 per hour with a basic package of benefits that would include healthcare provided through an expansion of Medicare. It would ensure full employment in the sense that the program would supply a job to anyone ready and willing to work. Jobs would be provided in every community—taking workers where they are, providing an economic boost to every community in the country.

In recent months, there has been a surge of interest in the creation of a national “job guarantee.” 1 These proposals (rightly) recognize that our nation is failing to provide an opportunity to work for millions of Americans who want and need jobs. The authors of this report have been working on such a proposal for nearly a quarter of a century. We have examined America’s experience with job creation programs, including the New Deal programs as well as those adopted in other countries. As a result of our long investigation of the successes and failures of those experiences, we have designed a program that is in some respects simpler than other proposals and yet provides greater potential for economic stabilization.

Our PSE program would pay a uniform program wage of $15 per hour for both part-time and full-time work. This ensures that anyone ready and willing to work will be able to earn at least that wage. In other words, this becomes the effective minimum wage across the country—a wage other employers will have to meet (either by paying at least that wage or by offering other benefits or opportunities in compensation for a lower wage). It also offers basic healthcare (we suggest that this be done through an expansion of Medicare) as well as other basic benefits (such as childcare). Again, this effectively establishes a minimum benefits package that other employers will have to match (or compensate for, if they do not match).

This inclusion of benefits and a generous wage was also part of the strategy that President Roosevelt attempted to pursue in his New Deal jobs programs, and his purpose was similar. By paying a living wage (with benefits), the program would provide a boost to living standards at the bottom. Unfortunately, President Roosevelt was not able to achieve that goal— he was forced by political opposition to accept a tiered wage structure, with relatively decent wages for skilled workers but poverty-level wages for low-skilled workers. States dominated by conservative politicians then ensured that most jobs created in their states through New Deal programs like the Works Progress Administration (WPA) were designated as low-skilled jobs, in order to keep wages low (NRPB 1941; Henry 2016). Radical restructuring of US labor markets to ensure that anyone who works full time will earn a living wage requires a high minimum program wage.

In addition, Roosevelt’s plan for the New Deal jobs programs was to create employment that did not compete with private sector activities. The goal was to ensure full employment with decent basic wages, but to do so without putting private employers out of business. It is important that the program of job creation does not pull workers out of existing jobs in the private sector. Our PSE program is designed to ensure that all employers pay fair (living) wages, but without competing for employees or displacing private sector undertakings.

Some job guarantee proposals would pay tiered wages, with higher wages for workers of higher skill. We see two problems with such a strategy. First, it could generate the same political fighting that we saw over the New Deal programs. States dominated by conservatives will try to exclude projects with higher wages. More importantly, higher wages for workers with greater skills will increase competition with private sector employers. Indeed, during periods of economic growth, there is already substantial competition for skilled workers. We believe that the most serious unemployment problem faced in the United States is chronic unemployment for workers with lower skills and education—they have high unemployment (and underemployment) through thick and thin of the business cycle. Our design targets job creation to this group. While workers with greater education and skills will turn to this program when jobs are scarce, PSE participation for them will be transitional: they will work temporarily in the program until conditions improve. Since their normal pay will be above the program wage of $15 per hour, they will have an incentive to return to employment outside the program. The PSE program will not try to retain them with pay above $15 per hour.

On the other hand, PSE will provide not only the opportunity to work for those with lower skills and education, it will enhance their chances to obtain work outside the program. They will gain work experience as well as on-the-job training. This should be made an explicit goal of every job created in the program. As such, when labor markets are tight, employers will recruit workers out of the PSE program.

By design, employment in the PSE program will move in a countercyclical pattern—growing in downturns and shrinking in recoveries as workers are pulled into the private sector. This helps to stabilize economic activity and household incomes. Economists call this an “automatic stabilizer.” The government’s budget will also move in a countercyclical manner as spending on the program cycles with the economy. This, too, helps to smooth cyclical fluctuations.

While we recognize some advantages to designs that feature a federally administered program like the WPA, we prefer a highly decentralized program. Today, the federal government directly employs only 2.8 million workers (less than 2 percent of US employment). Advocates of a universal job guarantee recognize that the program might employ five times that number of workers. We worry about the political feasibility of expanding federal employment on such a scale. We also see the advantages of decentralizing administration to the community level. Since the goal is to create jobs in every community, and to create projects that are beneficial to every community, it makes sense to involve the local communities in these projects, from the proposal stage through to implementation, administration, and evaluation.

Hence, while we would have the federal government provide the funding for the program, we would allow state and local governments as well as registered nongovernmental not-for-profits to put forth proposals. (To retain a level playing field within the private sector, we would not allow for-profit firms to participate—as they might try to replace part of their workforce with federally paid or subsidized workers.) Since federal monies would be spent, we envision that project assessment and evaluation would take place at multiple levels: community, state, regional, and federal.

We expect that most of the jobs created will provide public services in nonprofit community organizations, public schools, and state and local governments. We recommend that the federal government’s role be largely confined to providing administrative services (through local employment offices), project evaluation, and funding of wages, benefits, and some materials costs. However, if state and local efforts prove to be insufficient, the federal government will need to create supplemental projects to ensure a sufficient number of jobs are made available to all seeking work. These should be targeted to underserved groups.

While some advocates of job guarantee programs would follow the New Deal in undertaking large-scale public works projects, we would limit the use of PSE workers on infrastructure projects to small-scale projects or for approved apprenticeship or other trainee positions. We do this to avoid conflicts with the Davis-Bacon Act and prevailing wage laws that require wages higher than $15 per hour. As discussed above, we do not favor a tiered wage structure within the PSE program. Further, we do not want the program to compete with private sector employment. Virtually all public works projects today involve government contracts that are awarded to private construction firms. We would not use the PSE program to compete with private contractors or subvert prevailing wage laws. However, PSE workers could be used for very small projects (installing playground equipment), simple maintenance of infrastructure (planting vegetation as screening), and environmental retrofitting (adding insulation to housing in lowincome neighborhoods or to community buildings), where such projects do not conflict with applicable prevailing wage laws or the Davis-Bacon Act.

The types of projects undertaken will vary across the country, consistent with variations in state and local labor laws and needs. We also envision experimentation with alternative approaches to employment and the provision of community services. For example, a number of proposals for the creation of workers’ co-ops could be solicited. These might be supported by the PSE program for a limited time, with the federal government paying wages until the co-ops become self-supporting. Additionally, proposals can be solicited for apprenticeship programs that would train PSE workers for skilled employment outside the program after a specified term of PSE. While we want to avoid funding of programs that train workers for jobs that do not exist, training should be a part of every PSE job and some room should be made in the program for approved apprenticeship programs. Again, state and local rules will determine what kinds projects will be allowed.

While we advocate a program wage of $15 per hour, we recognize that moving immediately from the current federal minimum wage to $15 per hour would be disruptive in many regions of the country. Further, scaling up to a national program that might employ 15 million workers will take time. Hence, we recognize that the program will probably be phased in over a period of several years, both in terms of the numbers employed and the wage and benefits paid. Current proposals for lifting the minimum wage frequently allow for gradual increments, with the wage finally reaching $15 per hour in 2022. This allows employers to adjust to higher wages over a period of time. Implementation of the PSE program could follow a similar schedule.

Economic Effects on Output, Employment, Inflation, Government Budgets, and Poverty

This report presents for the first time the results of macroeconomic simulations for our proposed PSE program (see Section 3). For the purposes of the simulation, we assume that it is implemented in the first quarter of 2018 and fully phased in by the first quarter of 2019. We then run the simulation for a tenyear period, through the fourth quarter of 2027. In other words, we use real-world data for economic output, prices, employment, and demographics as inputs to provide a baseline forecast, and then add the program in order to compare the outcome against the baseline. We obtain estimates for important economic variables such as employment, output, income, inflation, and budget deficits.

The model we use is the widely adopted Fair model, which has proven to provide a robust fit to real-world data over a long period of time. For the purposes of the simulation, we assume that the program pays $15 per hour, which equates to $31,200 annually for full-time work. We assume that the average work week is 32 hours, which includes a mix of full-time and part-time workers. The program’s nonwage benefit costs are set at 20 percent. In addition, we assume that the program’s materials and other costs are equal to 25 percent of wage costs. As discussed, we recognize that real-world implementation of a PSE program would be phased in over a period of years, with the wage gradually rising to $15 per hour, but for the purposes of our analysis we model a program that is implemented quickly (over four quarters) and pays $15 per hour from the beginning.

We ran four simulations, using two settings for each of two sets of scenarios: higher- and lower-bound versions of the PSE program, both simulated with and without the Federal Reserve’s interest rate reaction function “turned on.” The higher-bound version adopts assumptions that lead to greater participation in the program, while the lower-bound assumptions lead to a smaller program. With the Fed’s reaction function “turned off,” we assume that the Fed does not raise interest rates in response to faster economic growth as the program increases employment and GDP growth; with it turned on, the Fed is presumed to raise rates to “lean against the wind.”

These simulations present how the economy, government budget, and the Fed will react to the PSE program, given alternative assumptions about the number of people who will accept the offer of a job. While we report the results from all four simulations, we feature the results from the higher-bound version. Not only does the higher-bound simulation result in the biggest program, but it also has the biggest impact on GDP, private sector employment, the federal budget, and inflation. We choose this simulation because we want to err on the side of assumptions that many would view as least favorable to such a program—that is, the most costly and inflationary.

We also choose to feature the results with the Fed turned off. This is the more inflationary scenario, since the Fed does not raise rates in response to inflation pressures. There is a tradeoff, however: the program is actually bigger with the Fed turned on because, by raising rates and slowing growth, the Fed’s reaction reduces private sector employment—with downsized workers moving into PSE. Further, the higher interest rates produced by the Fed’s rate hikes increase the government’s debt service so that total federal government spending is higher. We prefer to leave the Fed turned off because of the significant uncertainty over forecasting future interest rate policy.2 None of these effects is large, however.

We find that employment in the program at the higher bound peaks in 2022 at 15.4 million with the Fed’s interest rate rule off.3 The stimulus from PSE would also generate more than 4 million additional permanent private sector jobs (in the higher-bound simulation with the Fed turned off).4 Section 2 breaks down the likely PSE workforce according to the labor market categories from which they are drawn: using data for 2017Q3, we find that 5 million to 6 million PSE participants would come from among the unemployed, 3 million to 6 million would leave involuntary part-time work for the opportunity to work full time in PSE, and about 5 million would reenter the labor force to obtain paid employment.

The PSE program would boost real GDP by over half a trillion dollars per year.5 Surprisingly, even with the boost to employment (over 19 million more workers, with more than 15 million in PSE and 4 million new jobs in the private sector compared to the Fair model’s baseline) and the rise of the effective minimum wage to $15 per hour nationwide, the impact on inflation would be macroeconomically insignificant: the increase of inflation over the baseline inflation rate peaks at 0.74 percentage points in 2020 (in the higherbound version without the Fed hiking interest rates in response to inflation).6 By the end of 2027, the PSE program’s inflationary impact falls to 0.09 percentage points (higher-bound assumptions), as the economy has adjusted to the higher wages and levels of employment. In other words, moving to full employment at a living wage only minimally and temporarily boosts inflation, which then falls essentially to “white noise” as full employment is maintained through PSE.

While federal spending rises, federal tax revenue also rises, so that the net increase in the budget deficit is modest: $378 billion per year in the first five years and $415 billion per year in the second five years for the higher-bound simulations without the Fed’s rule. As a percentage of GDP, the net budgetary impacts are modest even with debt service included, with averages for all simulations falling between 1 percent and 2 percent of GDP. Net budgetary impacts less interest average between 0.83 percent and 1.13 percent of GDP for the lower-bound simulations, and 1.13 percent to 1.53 percent of GDP in the higher-bound simulations. Improved economic performance would help state government budgets, improving budgets by about $53 billion per year (in the higher-bound simulation).

However, these estimates are based on very conservative assumptions regarding potential savings on a wide range of federal, state, and local programs that are targeted to low-income households. In 2015, the federal government spent $104 billion on Food and Nutrition Service programs (including $74 billion for the Supplemental Nutrition Assistance Program, $21 billion for child nutrition programs, and $6 billion for the Special Supplemental Nutrition Program for Women, Infants, and Children), $17.3 billion on Temporary Assistance for Needy Families, $50 billion on housing assistance, and $67 billion on Earned Income Tax Credits. Additionally, total direct spending by states for social services and income maintenance on public welfare was $505 billion (this does not include spending on health, policing, or corrections). It is conceivable that if we included all social and economic benefits—including reductions in poverty, indebtedness, crime, and incarceration and improvements to physical and mental health—the impact on the federal government budget would be far less (and the positive impact on state budgets would be larger) than what we are reporting.

In this report, we also estimate PSE participation and reduction of poverty rates by race and gender (see Section 2). We find that the program would have a significant effect on poverty rates, and that PSE would disproportionately benefit women and minorities. At $15 per hour, one full-time worker could lift a family of up to five out of poverty; with one full-time and one part-time worker, a family of eight could rise out of poverty. Currently, nearly 6 million families live in poverty even with a full-time worker. We find that with one full-time worker per family in the program, 9.5 million children would be lifted out of poverty. The average income gap for the 8 million families living in poverty in 2017 was $10,505—which is less than what a half-time job in the PSE program would pay.

The social and economic costs of unemployment and poverty are already “paid for” by federal, state, and local governments, private firms, charitable organizations, and American households. While it is difficult to estimate the dollar savings that the various levels of government might experience from a program that creates jobs at living wages for perhaps 15 million workers, lifts all workers’ wages to at least $15 per hour, and significantly reduces poverty, there is little doubt that social safety net spending would decline and tax revenues would rise. It would be a mistake to focus on the “cost” of federal funding for a national PSE program without considering the much greater economic and social costs already borne by government and society as a whole, a large portion of which are due to inadequate work opportunities.

### Mechanism---AT: Labor Free Riding

#### AT: people won’t try

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How Do We Elicit Effort if People Cannot Be Fired?

The federal job guarantee ensures that workers cannot be fired and left without alternative employment. According to Janet Yellen, writing two decades before her appointment as chair of the Federal Reserve, if full employment were to be achieved, a worker would automatically shirk since they would be ensured employment at another firm (1985). But economic history indicates that such a claim is highly exaggerated, as strong labor markets have coexisted with high levels of economic growth (Bivens 2016).

If there were widespread worker shirking under conditions of strong labor markets, such strong periods of growth are unlikely to have occurred. Other studies, like those analyzing care work (England, Budig, and Folbre 2002) and management practices (Brockner et al. 1992), acknowledge that pecuniary incentives alone cannot adequately explain variations in worker effort.

Eliciting worker effort can be achieved through a variety of mechanisms. For instance, Samuel Bowles argues that from “a social efficiency standpoint . . . [m]ore carrot and less stick would affect a technical efficiency improvement” (2012, 279). If history is any guide, we can look to the accomplishments under the CCC and WPA, programs that were highly effective in providing socially and economically beneficial employment.

President Roosevelt and WPA administrator Harry Hopkins took great measures to minimize shirking or corruption throughout the WPA by establishing the “Division of Progress Investigation” (Wallis, Fisherback, and Kantor 2007). According to Paul Krugman, “this program was so effective, that a later congressional investigation couldn’t find a single serious irregularity it had overlooked” (2007, 62). This strategy may have been effective during a severe national crisis, but additional mechanisms can be put in place to minimize potential shirking under the FJG.

First, the FJG program will have an oversight committee, similar to the Division of Progress Investigation under the WPA. These positions can be filled by FJG employees, adding no additional cost to the program. In addition, wage variation will be built into the program. The prospect of promotions within the public-sector employment job ladder scheme provide financial incentives for workers to perform on the job. Although minimum compensation is set at the poverty line, we anticipate a mean salary that is 35 percent above the minimum, allowing for promotions, including higher compensation, for workers who develop or possess more specialized skills.

Finally, compensation will depend on the worker’s actually showing up for the duration of the work day. Workers under the FJG are paid hourly; thus, if a worker fails to show, wages will not be paid.28

In the case of the FJG, much of the work undertaken will be local, community-based projects. Because many of the projects are embedded in workers’ communities, workers themselves will be more vested in these [End Page 57] community-based projects, as occurred in the direct employment program in Argentina (Tcherneva and Wray 2005). Thus, through localization, reward systems, and proper oversight under the FJG program, we do not anticipate worker effort to be a substantial obstacle.

# DAs

## AT: Agenda DA

### Aff Popular---2AC

#### The aff is popular with the public and policymakers. It has a long political pedigree---apparent ‘opposition’ is due to lack of issue salience, NOT genuine disagreement.

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It is vital to recognize that not only does the idea of a federal job guarantee have a lengthy American political history, it also has significant political support in the present moment. For example, the Black Youth Project 100’s “Agenda to Build Black Futures” explicitly includes the charge that “All adults who want a job should have a right to employment through public or private opportunities through a federal jobs program” (2016).

In 2014, Jesse Myerson’s article in Rolling Stone proposed five policies that should be supported by the millennial generation; one of them was a government employment guarantee. The other four were an expansion of Social Security to provide a minimum income for all (de facto a basic income guarantee), land value taxes, a sovereign wealth fund with state ownership of stocks and bonds, and a public bank in every state. When the Huffington Post commissioned a national survey to assess the degree of support for each of the five, the only one with substantial support was the job guarantee (Resnikoff 2014).

Overall a plurality of respondents, 47 percent, said that they favored the government providing jobs for all persons who could not find work with the private sector, versus 41 percent who said no, and 12 percent who had no opinion. Fifty-nine percent of households with incomes less than $40,000 favored the job guarantee, while 36 percent of households with incomes greater than $100,000 favored it. Forty-three percent of white respondents and 67 percent of black respondents supported the job guarantee, and the breakdown along party lines was as follows: 65 percent of Democrats, 39 percent of independents, and 35 percent of Republicans said that they favored a federal job guarantee (Swanson 2014).

It is odd that no major political actor has seized upon this information and put forward a platform that includes a commitment to a federal job guarantee. But perhaps the national act of forgetting is so powerful that even the survey data does not convince politicians that the policy is viable. Building support for a federal job guarantee will require penetration of the barrier posed by “historical amnesia”. Hopefully, this essay can contribute to that process by helping to restore our historical memory.

### Aff Popular---1AR

#### COVID shifted the political terrain---the issue was aversion to government intervention, which has faded.

Eduardo Porter 21, economics reporter for the business section of The New York Times, where he was the Economic Scene columnist from 2012 to 2018, “Should the Feds Guarantee You a Job?,” New York Times, 2/18/21, https://www.nytimes.com/2021/02/18/business/economy/job-guarantee.html

For 30 years, Democratic administrations have approached the question by focusing on the overall economy and trusting that a vibrant labor market would follow. But there is a growing feeling among Democrats — along with many mainstream economists — that the market alone cannot give workers a square deal.

So after a health crisis that has destroyed millions of jobs, a summer of urban protest that drew attention to the deprivation of Black communities, and another presidential election that exposed deep economic and social divides, some policymakers are reconsidering a policy tool not deployed since the Great Depression: to have the federal government provide jobs directly to anyone who wants one.

On the surface, the politics seem as stuck as ever. Senator Cory Booker, the New Jersey Democrat, introduced bills in 2018 and 2019 to set up pilot programs in 15 cities and regions that would offer training and a guaranteed job to all who sought one, at federal expense. Both efforts failed.

And after progressive Democrats in Congress proposed a federal jobs program as part of their Green New Deal in 2019, Representative Liz Cheney of Wyoming, the No. 3 House Republican, asked, “Are you willing to give the government and some faceless bureaucrats who sit in Washington, D.C., the authority to make those choices for your life?”

But when it comes to government intervention in the economy, the political parameters have shifted. A system that balked at passing a $1 trillion stimulus after the financial crisis of 2008 had no problem passing a $2.2 trillion rescue last March, and $900 billion more in December. President Biden is pushing to supplement that with a $1.9 trillion package.

“The bounds of policy discourse widened quite a bit as a consequence of the pandemic,” said Michael R. Strain, an economist at the American Enterprise Institute, a conservative think tank.

On the left, there is a sense of opportunity to experiment with the unorthodox. “A job guarantee per se may not be necessary or politically feasible,” said Lawrence Katz, a Harvard professor who was the Labor Department’s chief economist in the Clinton administration. “But I would love to see more experimentation.”

And Americans seem willing to consider the idea. In November, the Carnegie Corporation commissioned a Gallup survey on attitudes about government intervention to provide work opportunities to people who lost their jobs during the Covid-19 pandemic. It found that 93 percent of respondents thought this was a good idea, including 87 percent of Republicans.

Even when the pollsters put a hypothetical price tag on the effort— $200 billion or more — almost nine out of 10 respondents said the benefits outweighed the cost. And hefty majorities — of Democrats and Republicans — also preferred government jobs to more generous unemployment benefits.

### Aff Popular---Degrowth Version

#### Global examples AND polls prove it’s popular in the US

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Some countries, regions and cities have already introduced elements of these policies. Many European nations guarantee free health care and education; Vienna and Singapore are renowned for high-quality public housing; and nearly 100 cities worldwide offer free public transport. Job guarantee schemes have been used by many nations in the past, and experiments with basic incomes and shorter working hours are under way in Finland, Sweden and New Zealand.

But implementing a more comprehensive strategy of degrowth — in a safe and just way — faces five key research challenges, as we outline here.

Remove dependencies on growth

Economies today depend on growth in several ways. Welfare is often funded by tax revenues. Private pension providers rely on stock-market growth for financial returns. Firms cite projected growth to attract investors. Researchers need to identify and address such ‘growth dependencies’ on a sector-by-sector basis.

For example, the ‘fiduciary duty’ of company directors needs to be changed. Instead of prioritizing the short-term financial interests of shareholders, companies should prioritize social and environmental benefits and take social and ecological costs into account. Sectors such as social care and pensions need secure funding mechanisms for public providers, and better regulation and dismantling of perverse financial incentives for private providers4.

Balancing the national economy will require new macro-economic models that combine economic, financial, social and ecological variables. Models such as LowGrow SFC (developed by T.J. and P.A.V.), EUROGREEN and MEDEAS are already being used to project the impacts of degrowth policies, including redistributive taxes, universal public services and reductions in working time.

Are there limits to economic growth? It’s time to call time on a 50-year argument

But these models typically focus on a single country and fail to take into account cross-border dynamics, such as movements of capital and currency. For example, if markets are spooked by low growth in one country, some companies might move their capital overseas, which could adversely affect the original country’s currency and increase borrowing costs. Conditions such as these posed severe financial problems for Argentina in 2001 and Greece in 2010. International cooperation for tighter border control of capital movements needs to be considered and the effects modelled.

Fund public services

New forms of financing will be needed to fund public services without growth. Governments must stop subsidies for fossil-fuel extraction. They should tax ecologically damaging industries such as air travel and meat production. Wealth taxes can also be used to increase public resources and reduce inequality.

Governments that issue their own currency can use this power to finance social and ecological objectives. This approach was used to bail out banks after the global financial crisis of 2007–8 and to pay for furlough schemes and hospitals during the COVID-19 pandemic5.

Inflationary risks must be managed, if increased demand outstrips the productive capacity of the economy. Earmarking currency for public services reduces cost-of-living inflation. But a degrowth strategy can also reduce demand for material goods — for example through progressive taxation, by encouraging shared and collaborative consumption, incentivizing renovation and repair, and supporting community-based services.

Another risk is that when states or central banks issue currency, it can increase the service payments on government debt. Research suggests that managing this risk requires careful coordination of fiscal policy (how much governments tax and spend) and monetary policy (how price stability is maintained)6. Modelling and empirical research is needed to shed light on the pros and cons of innovative monetary policy mechanisms — such as a ‘tiered reserve system’, which reduces the interest rate on government debt.

Manage working-time reductions

Trials of shorter working hours have generally reported positive outcomes. These include less stress and burnout and better sleep among employees while maintaining productivity7. Most trials have focused on the public sector, mainly in northern Europe. But private companies in North America, Europe and Australasia have run trials of four-day weeks, with similar results8. However, the companies were self-selecting, and research is needed to test whether this approach can succeed more widely, for example outside the white-collar industries that dominate the trials.

The Society for Community Organization report on a survey of young low-income Hong Kong citizens to ''lie flat''.

Young people in Hong Kong hold placards about the Lying Flat movement, which has seen large numbers of workers resigning from jobs.Credit: Jonathan Wong/SCMP via ZUMA Press

Barriers to implementing reduced hours need to be understood and addressed. Per-head staff costs, such as capped tax contributions and health insurance, make it more expensive for employers to increase staff numbers. Personal debt might encourage employees to work longer hours, although recent trials showed no evidence of this7,8.

The understanding of collective impacts is also limited. Outcomes from France’s experiments with a 35-hour week have been mixed: although many people benefited, some lower-paid and less-skilled workers experienced stagnant wages and more-intense work9. Such pressures need to be studied and addressed. Assumptions that reduced hours result in more employment need to be tested in different sectors and settings. Recent evidence suggests that workers can maintain productivity by reorganizing their work7,8.

Links between hours of work and carbon emissions also need to be established10. Although less commuting lowers energy use and carbon emissions during compressed work weeks, behaviours during three-day weekends remain underexplored. More travel or shopping during free time could increase emissions, but these effects could be mitigated if production in problem sectors is scaled down.

Reshape provisioning systems

No country currently meets the basic needs of its residents sustainably1. Affluent economies use more than their fair share of resources2, whereas lower-income countries are likely to need to use more. Researchers need to study how provisioning systems link resource use with social outcomes, for both physical systems (infrastructure and technology) and social ones (governments and markets).

Bottom-up studies suggest that better provisioning systems could deliver decent living standards with much less energy use than is required today11. These studies don’t fully account for institutions such as the state, and are likely to be underestimates. Top-down studies, which do factor in such institutions, suggest that more energy is required to meet human needs12. But these studies are unable to separate out wasteful consumption such as big cars or yachts, and are thus likely to be overestimates.

Get the Sustainable Development Goals back on track

Researchers need to reconcile these approaches, and consider resources besides energy, including materials, land and water. They need to examine the provisioning systems for housing, transportation, communication, health care, education and food. What social and institutional changes would improve provisioning? What types of provision have the most beneficial social and environmental outcomes? Such research can be done using empirical observation, as well as through modelling.

Take housing, for example. In many parts of the world, property markets cater to developers, landlords and financiers. This contributes to segregation and inequality, and can push working people out of city centres so they are dependent on cars, which increases fossil-fuel emissions. Alternative approaches include public or cooperative housing, and a financial system that prioritizes housing as a basic need rather than as an opportunity for profit.

Political feasibility and opposition

Growth is often treated as an arbiter of political success. Few leaders dare to challenge GDP growth. But public attitudes are changing. Polls in Europe show that the majority of people prioritize well-being and ecological objectives over growth (see go.nature.com/3ugg8kt). Polls in the United States and the United Kingdom show support for job guarantees and working-time reductions (see go.nature.com/3uyhdjv and go.nature.com/3y8ujz5). The large numbers of workers who have left their jobs in movements such as the US Great Resignation or the Lying Flat protest groups in China show there is demand for shorter working hours and more humane and meaningful work. Nonetheless, political parties that have put forward degrowth ideas have received limited support in elections. That begs the question: where would the drive for degrowth policy come from?

### Aff Popular---Dems

#### Democrats love it---it’d be an instant and overwhelming electoral win.

Sean McElwee et al. 18, Sean McElwee is a researcher and writer based in New York City, and co-founder of Data for Progress; Colin McAuliffe is a New Jersey-based data scientist and a co-founder of Data for Progress; and Jon Green is a PhD student at Ohio State University and a co-founder of Data for Progress, “Why Democrats Should Embrace a Federal Jobs Guarantee,” The Nation, 3/20/18, https://www.thenation.com/article/archive/why-democrats-should-embrace-a-federal-jobs-guarantee/

For decades, the idea of government-guaranteed jobs for all Americans has stalked the outer edges of political debate. It has been promoted by labor unions and has ideological support among some progressive thinkers, but in recent years hasn’t been seen as a mainstream policy issue for the Democratic party. Now, that may be changing.

Senator Kirsten Gillibrand told The Nation she supports a government-backed jobs guarantee. “Guaranteed jobs programs, creating floors for wages and benefits, and expanding the right to collectively bargain are exactly the type of roles that government must take to shift power back to workers and our communities,” she said. “Corporate interests have controlled the agenda in Washington for decades so we can’t tinker at the margins and expect to rebuild the middle class and stamp out inequality. We need to get back to an economy that rewards workers, not just shareholder value and CEO pay.”

Gillibrand is widely considered to be a front-runner for the 2020 Democratic presidential nomination, and a jobs guarantee will definitely be part of that discussion. Already, major Democratic think tanks have been prepping detailed policies for how the federal government can guarantee that every worker can get a job.

The Center on Budget and Policy Priorities, for example, recently released a paper arguing for a job guarantee through a national infrastructure bank that would set a floor on wages and benefits. The Center for American Progress has also crafted a job-guarantee proposal it dubs “a Marshall Plan for America.”

The CBPP paper\* envisions an infrastructure bank that would fund vital projects and ensure that jobs are well-paid, with health insurance and paid leave. The National Investment Employment Corps would guarantee a minimum annual wage of $24,600, with opportunities to advance and health and leave benefit. The plan’s mean expected wage of $32,500 a year is more than three times the highest proposed universal basic income.

The government would also be able to use this job-creating ability to expand jobs in sectors where the market won’t currently invest. “You can imagine greening the entire United States,” said Darrick Hamilton, an economist who co-authored the CBPP paper. “The ideas of the jobs go far beyond my imagination, and the NEIC allows communities to have a say in the projects they need.”

Hamilton noted that a job guarantee “would especially benefit marginalized and stigmatized workers that face structural barriers in the private sector.” As his CBPP paper notes, a job guarantee has a long history in the United States: Early versions of the Humphrey-Hawkins Act of 1978 included language that would have established a Job Guarantee Office, but it was scrapped in favor of an “incrementalist approach.” There are international examples as well, from the Argentina’s Jefes y Jefas program and India’s and National Rural Employment Guarantee Act (NREGA) to South Korea’s Moon Jae-in’s responding to the country’s rising inequality with a promise to create 810,000 government jobs.

A jobs guarantee would also boost wages in the private sector, which have been depressed in part by the consolidation of large corporations. Take hospitals: As they have merged, nurses (disproportionately women of color) find it more difficult to go from hospital to hospital and leverage job opportunities for higher wages. But if nurses knew they could go get a job through the government, the private sector would face pressure to increase pay. “The corporate establishment hates full employment and has fought very hard to ensure the economy never reaches full employment—even though it’s the most successful means of improving human welfare we’ve ever enacted,” said Economist Marshall Steinbaum.

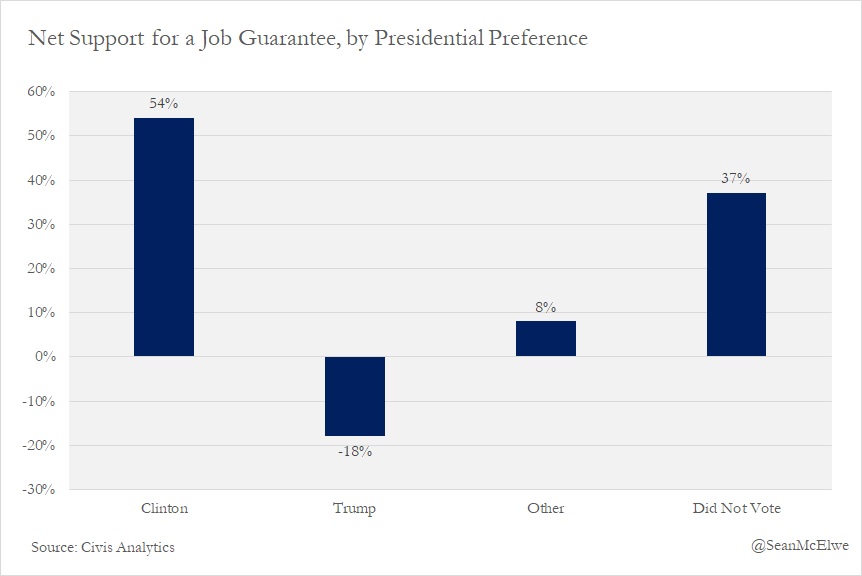
To explore the possibility of Democrats’ running on a guaranteed-job plan, we asked the respected data analytics firm Civis Analytics to not only poll guaranteed jobs, but poll it in the way that would be most likely to gain opposition from voters. They asked respondents: “Democrats in congress are proposing a bill which would guarantee a job to every American adult, with the government providing jobs for people who can’t find employment in the private sector. This would be paid for by a 5 percent income tax increase on those making over $200,000 per year. Would you be for or against this policy?”

We expected that in a generic scenario, people would support guaranteed jobs, but before urging Democrats to embrace it, we wanted to see if the policy might take a hit when Republicans made the issue partisan and talked about tax hikes.

The results of the Civis polling were nothing short of stunning, showing large net support for a job guarantee: 52 percent in support, 29 percent opposed, and the rest don’t know. “Even with explicit partisan framing and the inclusion of revenue in the wording, this is one of the most popular issues we’ve ever polled,” said David Shor, a senior data scientist at Civis Analytics.

The chart below shows net support among different political groups. Clinton supporters overwhelmingly support a job guarantee (69 percent to 16 percent, with the rest unsure). High levels of support among nonvoters are particularly noteworthy. Even among Trump voters, support was only net negative of 18 points, which seems high, but 32 percent of Trump voters support a job guarantee, even with the negative framing.

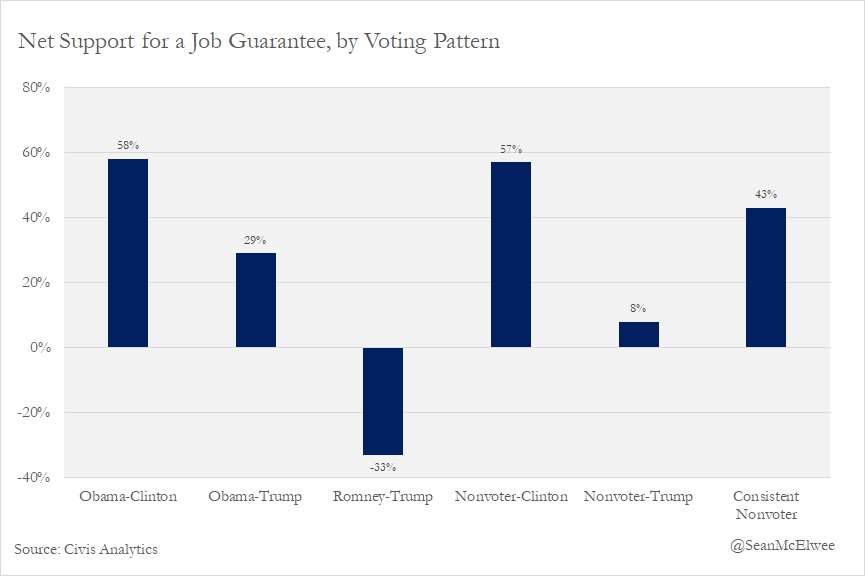
In addition, the job-guarantee polls strongly across all racial groups, but through the roof among black voters (net support of 62 percent) and Latinos (55 percent). In addition, young voters love the job guarantee, with a net support of 43 percent among individuals 18–34 and a net support of 22 percent among 35–64. and net support of 8 percent among individuals 65 and older.



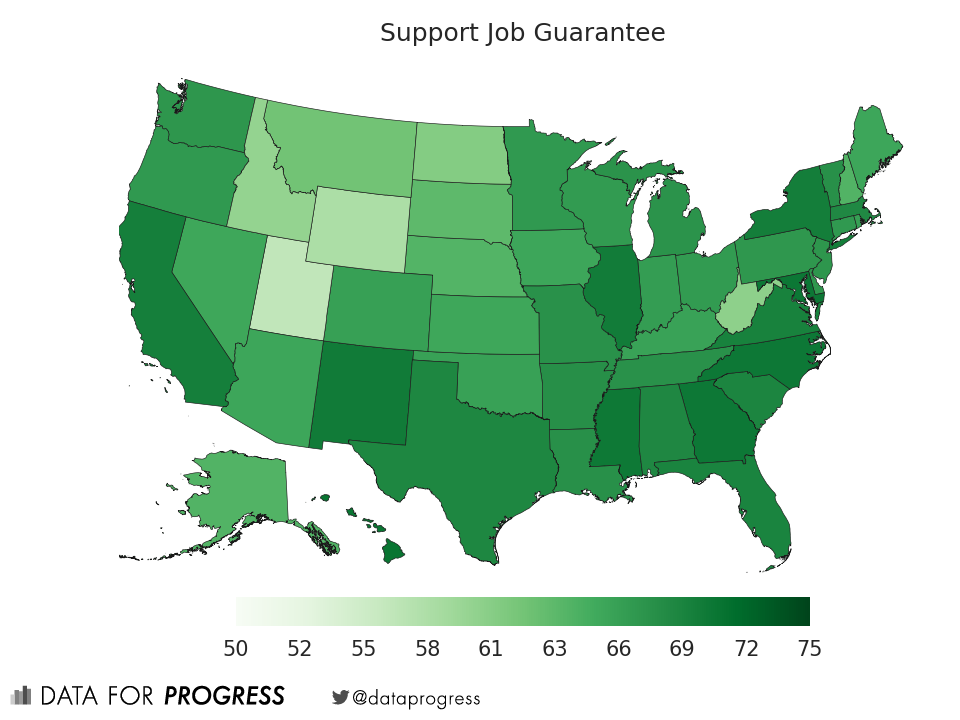
Among the merits of the guaranteed job is that it appeals most to the voters Democrats struggled to mobilize in 2016: low-income voters, and particularly low-income voters of color. Democrats would benefit immensely from increasing the class polarization of the electorate—that is, by winning over more working-class voters at the expense of some wealthy voters.

With a guaranteed-job proposal, Democrats could win three working-class white, black, and Latino voters for every rich white voter they lost. “It’s rare to see an issue with such a strong income divide. Republicans who make less than 25,000 per year are more supportive than Democrats who make more than 150,000,” said Michael Sadowsky, a data scientist at Civis.

The Civis polling suggests that a guaranteed-jobs proposal could help bring voters back into the Democratic fold, or at least it won’t hurt: 56 percent of Obama-to-Trump voters support a job guarantee, and only 26 percent oppose. Among nonvoters, 58 percent support the job guarantee and 15 percent oppose. The job guarantee also transcends divisions from the 2016 Democratic presidential primary: Net support among Clinton voters was 54 percent, and 61 percent among Sanders voters.



American elections, as progressives have learned all too well, are not decided by the national popular vote. For that reason, our think tank Data for Progress modeled state-level support for guaranteed jobs using data provided to us by the Center for American Progress, with the help of Senior Adviser Austin Rochford. We find that the job guarantee polls stunningly well in all 50 states. Even in the state with the lowest modeled support, Utah, support is still 57 percent. Deep-red states like West Virginia (62 percent support), Indiana (61 percent), and Kansas (67 percent) all boast strong support for a job guarantee. Indeed, the places where the job guarantee is most popular might be surprising: DC (84 percent), Mississippi (72 percent), North Carolina (72 percent), Hawaii (72 percent), and Georgia (71 percent) have the highest estimates, though support is also high in solid-blue states like California and New York (both 71 percent).



“The results of this research were just staggering. Americans not only overwhelmingly oppose cuts to programs like Medicaid and nutrition assistance. They also support really bold progressive alternatives—including a jobs guarantee,” said Jeremy Slevin, the director of advocacy for the Poverty team at CAP. “If there was any doubt as to whether progressives should champion far-reaching proposals to help people find good-paying jobs, I hope this erases it,” he said.

That appears to be happening already, from Gillibrand to several congressional candidates for 2018. In deep-blue NY-14, Alexandria Ocasio-Cortez said she’s proposing a federal jobs guarantee and sees guaranteed jobs as a way to set a floor on working conditions. “It’s basically a public option for jobs,” she said. “It guarantees a bare minimum which employment can’t go below.” She also wants jobs that solve externalities provided by the market, such as green jobs.

When we talked to Dan Canon, a congressional candidate in Indiana’s ninth district (where Trump won by a 27 point margin), he said he enthusiastically embraced a federal jobs guarantee and talked about it frequently on the campaign trail. “It’s one of those things that surprised me in how widely it has been accepted by people of all political stripes,” he said. Canon connects a job guarantee to the need for infrastructure: “We have been trained out of thinking about commonsense solutions. People need jobs, what do we do? Give them jobs.”

The job guarantee could end up being a key issue in some Democratic primaries this year. Kerri Evelyn Harris, a Democratic candidate running against incumbent Tom Carper for Senate in Delaware, said, “It is time to offer American citizens guaranteed, quality jobs, with growth potential in the government sector.” She added, “There are an array of areas that could use additional workers, from infrastructure to social work. A guaranteed-jobs program would not only help inject hope back into communities which have broken spirits due to decades of dismal job opportunities, but it will also help pump money into the economy by way of purchases by the newly and adequately employed.”

A job guarantee offers a way for the Democratic Party to return to its roots as a multiracial working-class party. As President Donald Trump recently proclaimed, “We know the single best anti-poverty program is a very simple and very beautiful paycheck.” Indeed, and the government should guarantee one.

## AT: Big Ag Good DA

### Big Ag Good DA---2AC

#### Decoupling traditional producers enhances the stability of yield.

Naveeen Chandra Pant et al. 21, Assistant Professors of Biochemistry, Agricultural Economics, and Soil Science, all at COA, “Intellectual Property Rights and Food Security,” Vigyan Yarta, Vol. 2, Iss. 7, https://www.vigyanvarta.com/adminpanel/upload\_doc/VV\_0721\_15.pdf

Food Security

As per the reports of FAO (2021) malnutrition and hunger have reached critical levels, due to conflicts, climate changeand worldwide economic slowdowns. The situation has aggravated due to poverty and inequality. Thus the danger looms on millions of people around the world as they suffer from food insecurity and malnutrition. Food security and sustainable agriculture cannot be achieved without a legal/intellectual property framework which may undermine the role of farmers and their agricultural practices. For farmer’s knowledge, including traditional agricultural practices, are critical to their identity and survival. When IPR privileges modern agricultural practices at the expense of traditional agriculture, it fosters a dependence of farmers on corporate seed monopolies and proprietors of modern agriculture, severely impacting their economic status and their ability to act as important connecting link for supplementing global food security with their traditional agricultural practices and knowledge along with the creating ecological sanctity and environmental harmony. In a nut shell traditional knowledge of the farmer’s relationship with plants and surrounding environment may pave a way for addressing the challenges of food security with improved nutrition and affordability of healthy diets.

CONCLUSION

International legal provisions for the protection of innovations in plant genetic resource smainly focus on modern agriculture and other scientific plant breeding endeavours. Little attention has been given in safeguarding the long-standing genetic revolutions that have taken place in traditional farmer’s fields. Yet the relationship of dependence between modern day agriculture and traditional farming practices suggest that both are rational approaches and are indispensable in addressing the burden of hunger and food security. Now it’s the time to recognize the ethos of rational approaches in agriculture along with understanding the importance of traditional farming practices. Sincere efforts in different policy environments, advances in agro biotechnology/modern agriculture, increased food production and food security needs to be undertaken to oversee and mitigate the crisis of food insecurity and hunger of a global proportion.

#### Industrial ag culminates in extinction.

Matthew R. Sanderson and Stan Cox 21, social scientist at Kansas State University, research scholar in ecosphere studies at The Land Institute, 05/17/21, Big Agriculture Is Leading to Ecological Collapse, https://foreignpolicy.com/2021/05/17/big-industrialized-agriculture-climate-change-earth-systems-ecological-collapse-policy/#:~:text=Forest%20loss%20and%20species%20extinctions,has%20scaled%20up%20in%20Brazil.&text=In%20August%202019%2C%20smoke%20blocked,planet's%20capacity%20to%20support%20life.

Today, there is more carbon dioxide in the atmosphere than at any point in the past 3.6 million years. On April 5, atmospheric carbon dioxide exceeded 420 parts per million—marking nearly the halfway point toward doubling the carbon dioxide levels measured prior to the Industrial Revolution, a mere 171 years ago. Even amid a pandemic-induced economic shutdown—during which global annual emissions dropped 7 percent—carbon dioxide and methane levels set records in 2020. The last time Earth held this much carbon dioxide in its atmosphere, sea levels were nearly 80 feet higher and the planet was 7 degrees Fahrenheit warmer. The catch: Homo sapiens did not yet exist.

Change is in the air. U.S. Director of National Intelligence Avril Haines announced climate change is “at the center of the country’s national security and foreign policy.” Business-as-usual is no longer a viable strategy as more institutions consider a future that will look and feel much different. In this context, it is striking to read a recent piece in Foreign Policy arguing “big agriculture is best.”

“Big agriculture is best” cannot be an argument supported by empirical evidence. By now, it is vitally clear that Earth systems—the atmosphere, oceans, soils, and biosphere—are in various phases of collapse, putting nearly one-half of the world’s gross domestic product at risk and undermining the planet’s ability to support life. And big, industrialized agriculture—promoted by U.S. foreign and domestic policy—lies at the heart of the multiple connected crises we are confronting as a species.

The litany of industrial agriculture’s toll is long and diverse. Consider the effects of industrial animal agriculture, for example. As of this writing, animal agriculture accounts for 14.5 percent of total anthropogenic greenhouse gas emissions annually. It is also the source of 60 percent of all nitrous oxide and 50 percent of all methane emissions, which have 36 times and 298 times, respectively, the warming potential of carbon dioxide. As industrial animal agriculture has scaled up, agricultural emissions of methane and nitrous oxide have been going in one direction only: up.

Efforts to scale industrial agriculture are undermining the planet’s capacity to support life at more local scales too. Consider Brazil, home to the Amazon Rainforest, which makes up 40 percent of all remaining rainforest and 25 percent of all terrestrial biodiversity on Earth. Forest loss and species extinctions have only increased as industrial agriculture has scaled up in Brazil. Farmers are burning unprecedented amounts of forest to expand their operations in pursuit of an industrial model. In August 2019, smoke blocked the sun in São Paulo, Brazil, 2,000 miles away from the fires in the state of Amazonas.

In India, the pace of agricultural industrialization is hastening as indicated by rising agricultural production and declining employment in agriculture, which now accounts for less than one-half of India’s workforce. Agriculture has been scaled with all the tools of the Green Revolution: a high-input farming system comprised of genetically modified seeds and accompanying synthetic fertilizers and pesticides. As agriculture has industrialized in India, the use of pesticides and fertilizers has risen as well.

Although it has become more difficult to breathe the air in Brazil, it has become harder to find clean freshwater in India, where pesticide contamination is rising. There, the costs of the industrial agriculture model are plainly ecological and human: Unable to drink the water or pay back the loans they took out to finance their transition to industrial farming, an alarming number of Indian farmers are drinking pesticides instead. Almost a quarter-million Indian farmers have died by suicide since 2000, and 10,281 farmers and farm laborers killed themselves in 2019 alone. In Punjab, the country’s breadbasket, environmental destruction coexists with a raging opioid epidemic ensnaring nearly two-thirds of households in the state.

If the events in Brazil and India sound familiar to U.S. readers, it is because there are analogous stories in the United States—where industrial agriculture is rendering entire landscapes uninhabitable. The U.S. Corn Belt, which spans the region from Ohio to Nebraska, produces 75 percent of the country’s corn, but around 35 percent of the region has completely lost its topsoil. Industrial agriculture has been pursued with special zeal in Iowa, where there are 25 million hogs and 3 million people. There, water from the Raccoon River enters the state capital of Des Moines—home to 550,000 people—with nitrates, phosphorus, and bacteria that have exceeded federal safe water drinking standards.

At a larger scale, nutrient runoff from industrial agriculture in the U.S. Midwest has created an annual dead zone—a hypoxic area low in or devoid of oxygen—that is the size of Massachusetts. The ecological consequences of industrial agriculture manifest alongside a growing human toll. Rural communities are experiencing rising suicide rates, especially among young people, along with increases in “deaths of despair” from alcohol and drugs—an expanding human dead zone.

Although tragic, these outcomes are neither inevitable nor natural. They are outcomes of U.S. policy choices. Industrialized agriculture has been a hallmark of U.S. foreign policy in the post-World War II era. Under the guise of development for all and the mantra of “feed the world,” the United States has used policy to dump surplus grain in low-income countries—undermining markets for smallholder farmers—and cultivate foreign markets as importers of high-input, industrial agriculture technologies to scale agriculture. At home, federal policy since the 1970s has explicitly promoted scaling industrial agriculture through the “get big or get out” imperative.

Society did not arrive at this precipice because agriculture was too small or because industrialized agriculture respected the laws of physics. Instead, we are peering into an abyss of systemic socioecological collapse because every effort has been made to use industrialization to break through all known ecological and human limitations to scaling agriculture.

Industrial agriculture simplifies ecosystems, rendering us more vulnerable to threats. Transformative policies will be required to pull us back from the edge. As a start, the United States could set an example for the Global North with a 50-year farm bill.

#### It’s collapsing the diversity of crops, risking a global ecosystem cascade

Patrick Mulvany 21, Centre for Agroecology, Water and Resilience, Coventry University, “14 - Sustaining Agricultural Biodiversity and Heterogeneous Seeds,” Rethinking Food and Agriculture, edited by Amir Kassam and Laila Kassam, Woodhead Publishing, 01/01/2021, pp. 285–321 ScienceDirect, doi:10.1016/B978-0-12-816410-5.00014-1

As compared with wider biodiversity “the special nature of agricultural biodiversity, its distinctive features, and problems needing distinctive solutions” was recognized by the Convention on Biological Diversity (CBD) in its early years (CBD, 1994), confirming the need for globally agreed management and governance measures that are distinct from those governing the preservation of wider biodiversity through, for example, Protected Areas governance measures. These measures recognize that, for example: people have a key role in sustaining and dynamically managing agricultural biodiversity; many components of agricultural biodiversity, such as the diversity of the seeds of food crops, would not exist without this dynamic management and associated indigenous and local knowledge and culture; intraspecific diversity and intravarietal diversity within productive ecosystems are at least as important as diversity between species; access to, and control over, components of agricultural biodiversity can be restricted by legal and technological means thereby potentially limiting its availability; and that many food production systems are based on species introduced from other communities, countries, and continents, creating great interdependence on agricultural biodiversity across the world.

Small-scale food providers’ perspectives on the importance of agricultural biodiversity

Biodiversity has as a fundamental base the recognition of human diversity, the acceptance that we are different and that every people and each individual has the freedom to think and to be. Seen in this way, biodiversity is not only flora, fauna, earth, water and ecosystems; it is also cultures, systems of production, human and economic relations, forms of government; in essence it is freedom (Via Campesina, 2000).

● Agricultural biodiversity is enhanced by and supports agroecological production: it is an essential pillar of peasant strategies for survival and autonomy through reducing costs and risks. Peasant agroecological production systems have cultivated, sustained, and developed millions of heterogeneous varieties of crops and trees, breeds of livestock, and diverse aquatic organisms over millennia, and throughout the world. These nurture healthy populations of pollinators, pest predators, soil, and aquatic organisms above and below ground and in waters.

● Agricultural biodiversity is intertwined with our knowledge: it is more than the diversity of genetic resources, species, and ecosystems. It essentially includes the knowledge that led to its development and for its use. This knowledge is embedded in a dynamic web of relations between human beings and nature, continuously responding to new problems and finding new solutions.

● It makes the environment more resilient: environments rich in agricultural biodiversity are ecologically resilient to climate change and other threats, and also deliver other benefits to the environment and people, such as improved soil water retention, less soil erosion, increased soil biodiversity, improved pollination, as well as clean air and water.

● It improves the health of people and the planet: agricultural biodiversity is essential to human survival and health; when this biodiversity is diminished, disequilibrium results, which threatens health, both of humans and of nature.

● It is the product of their knowledge and collective rights: the successful enhancement of agricultural biodiversity—through exchanges within and between small-scale producers, countries, and continents—depends on peasants’ knowledge and collective rights of access to and control over territories, waters, seeds, and biodiversity.

● Its enhancement requires the freedom for peasants to choose the social system, the agrarian system, and culture that value it in a holistic sense, in the face of economic “values” imposed by a “free” market that destroys peasants’ seeds, biodiversity, and associated cultural freedoms.

Adapted from IPC (2016).

14.3 Threats to agricultural biodiversity

The negative impact on agricultural biodiversity from industrial agriculture, intensive livestock production, and large-scale mechanized fisheries is summarized in many international assessments that have been completed this century, from the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) to FAO’s report on the State of the World’s Biodiversity for Food and Agriculture (FAO, 2019; IAASTD, 2009). Through land use change, destructive and unsustainable management of ecosystems and “downstream” pollution of more biodiverse production systems, industrial monocultures are the main cause of the loss of biodiversity. Industrial production and the value chains it supplies with their associated transport, processing, storage, and retailing systems are also principal drivers of climate change, through associated greenhouse gas emissions, causing further stresses for biodiversity (GRAIN & La Via Campesina, 2014).

The loss of biodiversity in agroecosystems brings devastating consequences … simplified, human constructed agroecosystems may be unable to maintain their structure … [with] the accelerated loss of resilience and diversity and the erosion, salinization or decline in the fertility of soils.

Egziabher (2002)

The impact of these industrial production systems on agricultural biodiversity is even more marked. Over the past 70years, in the wake of 20th century global conflicts and subsequent instability in food supplies, international efforts to increase production of staple grains and commodities have been further intensified. These efforts include the consolidation, intensification, and simplification of peasant systems (Green Revolution technologies) with the expansion of genetically uniform monocultures displacing production using biodiverse peasant varieties. In addition, with the global spread of the industrialization of agriculture and livestock production, including largescale land use changes from forests to plantations and cropping, and the expansion of industrial livestock production and large-scale fisheries, agricultural biodiversity has been further eroded.

Causes of loss of agricultural biodiversity

The social movements of smaller-scale food providers have summarized their views on the principal causes of the loss of agricultural biodiversity:

● The industrial model of production and consumption is rapidly eroding rural societies that manage agricultural biodiversity.

● The industrial model of production also displaces peasant varieties and breeds through using genetically uniform, and, increasingly, genetically modified, monocultures of crops, livestock, and fish, while locking up diversity in gene banks.

● Land grabs and ocean/water grabs extend the area under this model of production.

● Intensive use of pesticides, herbicides, and chemical fertilizers further reduces agricultural biodiversity and ecosystem functions.

● Climate change, exacerbated by this model, is putting new pressures on the local diversity of crops and livestock as weather patterns change, and new pests and diseases proliferate. Consequent disaster relief efforts distributing inappropriate, often industrial, seeds and livestock breeds undermine local agricultural biodiversity.

● Industrial research systems for this model devalue and erode peasant and indigenous knowledge, local research capacities, and the multitude of local innovation systems that foster agricultural biodiversity.

● Monopolies, favored by this model, control industrial seed, agrochemical, and industrial commodity markets and value chains, and this jeopardizes freedom for peasants to control, access, and use agricultural biodiversity.

● Intellectual property rights (IPRs) (sometimes dubbed “industrial” property rights by peasant organizations because they defend the interests of industry) and other laws that protect seed monopolies stimulate the widespread use of industrial varieties and can also criminalize peasant producers who develop, use, share, exchange, and sell their heterogeneous seeds.

Adapted from IPC (2016).

The industrial model of production favors the use of crop varieties, livestock, and aquatic breeds that respond to high applications of agrochemicals and intensive feeds, and the simplification of ecosystems. Its impacts in rural territories across the world include not only the rapid spread of monocultures but also massive increases in the use of associated pesticides and herbicides, resource consolidation, and the exodus of producers. The industrial model of production also produces excessive waste; it is built on an economy of surplus production of commodities rather than on the basis of ecological sustainability and realizing food sovereignty and the Right to Food. This model underlies the dysfunctionality of our food system (Mulvany & Ensor, 2011; van der Ploeg, 2009). An alternative view, as Eric Holt-Giménez has often pointed out, is that the system is not dysfunctional, but rather functioning as intended; it was never meant to provide good food for all, or preserve the environment, but to serve vested interests (Holt-Giménez, 2017).

14.4 Few crops “Feed the World”?

While industrial production systems per se undermine agricultural biodiversity for all the reasons cited previously, and more, a further determining factor is that, for complex reasons, probably related to power and control, human civilizations have selected relatively few crops for most of their food. By focusing on these few species, it can skew the discourse on sustaining agricultural biodiversity to the exclusion of concern about the diversity of the very many other species that are important for a sustainable food system.

Estimates of the numbers of “how many crops feed the world” often build on the work of the Prescott-Allens (Prescott‐Allen & Prescott‐Allen, 1990). Their conclusion was that most food in the global food system comes from 82 species commodities as they describe them (i.e., species as well as genera, such as the cabbage family Brassicaceae) consisting in total of 103 species. These, they calculate, contribute 90% of national per capita supplies of food plants. Subsequently, Colin Khoury and colleagues concluded, based on the analysis of FAO data in 2014, that the number is slightly fewer, i.e., 94 species (Khoury et al., 2014). In answer to his own question, “So how many crops feed the world anyway?,” Guarino (2014), in the Agricultural Biodiversity Weblog, summarizes the state of knowledge and more or less concurs with the estimate of Khoury but adds Quinoa—increasing the number to 95 species— and reflects that precision about the exact numbers is not particularly important. The number is indicative of the limited number of species that dominate the global (especially industrial) food system.

[FIGURE 14.1 OMITTED]

Fig. 14.1 shows the number of crops used directly for food, in part or wholly, which dominate the industrial food system. It is based on an interpretation of the data recorded by FAO for 2018.

There seems to be general consensus that only three species—maize/corn, rice, and wheat— provide about half the world’s plant-derived calories (Tutwiler, Bailey, Attwood, Remans, & Ramirez, 2017), and, with potatoes, the proportion increases to about 60% of the formally recorded food system. The choice of the next eight species that, with maize/corn, rice, wheat, and potatoes, make up 75% of the industrial food supply, varies, depending on the author. They may include plantains and bananas, sweet potatoes, yams, cassava, and other roots, cereals such as barley, oats, rye/ triticale, sorghum/millets, chickpeas, and other pulses.

The species in the additional 83 crops that provide 90% of food include some that might be suitable substitutes in the foregoing list of eight species, e.g., several vegetables and fruits that have many varieties that are important locally, and a few of these varieties are also globally dominant in the industrial food system such as tomatoes, mangoes, and apples. Also, the list includes many vegetable species, such as those in the Brassica (cabbage family) and Allium (onion/garlic family) genera, common fruits, and many legumes and pulses. In addition to these 95 species there are some 7000 species known to be used by people for their food. The prevalence and importance of these is probably underreported.

What’s deliberately missing in this figure are industrial commodity crops, such as oil palm and other oil crops, soya, sugar cane, and sugar beet, which are traded as comestible commodities mainly for food processing and livestock feed, although on a smaller scale they may be used directly in local food webs.

Historically, human civilizations have selected relatively few species for their main foods. It is interesting to note that the four crops (maize/corn, rice, wheat, and potatoes), which make up 60% of the industrial food system, originated in regions that gave rise to significant empires; the Olmec, Aztecs, and Mayans developed their empires in MesoAmerica (today’s Mexico and Central America), the region where maize/corn was selectively developed from the grass Teosinte; rice developed in SE Asia where dynasties ruled for thousands of years; the Babylonian empires of the “fertile crescent” in West Asia arose in the region that developed wheat and other cereals; and in the Andean region, home to the Inca empire, potatoes were selected as an important food crop from the many roots and tubers that developed in the heterogeneous ecosystems on the slopes of the Andes.

The most important aspect of the quantification of the number of food crops that “feed the world” to this discussion about agricultural biodiversity is the recognition that, in reality, humans regularly grow and harvest food from more than 7000 species, and that there are up to another 70,000 species known to have edible parts (Tutwiler et al., 2017).

It is therefore plausible to suggest that there is underreporting of the wider number of species known to be used for food by people across the world. The few dominant species in the industrial food system, whose seed is increasingly controlled by a few corporations and whose production, trade, processing, and retail are captured in official records, bias attention in official statistics to these crops and, hence, in a selfreinforcing process also create a bias in food system presentation and planning.

Though a limited number of species are used in the industrial food system, the security of the world’s food supplies was attained through the use of a multiplicity of crop varieties and livestock breeds. Large areas of single species can be relatively resilient and maintain productivity if there were significant varietal diversity within the production system. Millions of diverse varieties of the commonest crops have been developed by farmers over millennia as they selected seeds for various traits over many generations and when they adapted crops to new environments. For example, more than 100,000 varieties of rice are known to have been developed in India. In the in vitro collections of the Peru-headquartered International Potato Centre there are more than 4000 varieties of potatoes and in the Global Seed Vault in Svalbard, a million accessions of diverse seed varieties are stored (Asdal & Guarino, 2018). While having the backup of diversity ex situ in gene banks provides some insurance, it is the in situ intraspecific and intravarietal diversity on-farm within a field that allows crops to evolve (Mulvany, 2017). This can compensate somewhat for limited species diversity in production systems. Tolerance of the different varieties of a single crop species within a field to varying weather patterns, rain/drought, heat/frost, changing soil conditions, diseases, insect attacks, and so on, can produce compensatory growth by one variety in the event that another variety suffers. Such has been the experience of peasant farmers in their biodiverse plots of, for example, potatoes. In Peru, peasant farmers in the Andes grow potato mixtures of up to 50 varieties in a “Challo” that, overall, can resist variable weather conditions and always provide consistent production from season to season.

Now, it is this biodiversity—the number of varieties of each species in current production systems—that is fast disappearing. Assessments conclude that for some crops, more than 90% of varieties are no longer being grown regularly on-farm and the number of livestock breeds is also diminishing (FAO, 1997a, 2007). The single greatest cause of the loss of varietal diversity is the result of their substitution, on a very large scale, by relatively few industrial varieties (FAO, 1997a).

This rapid erosion of the intraspecific variety within each species, i.e., the small number of varieties that dominate production, is of equal if not greater concern than the limited number of species grown. Genetically uniform monocultures of single varieties are easily susceptible to the effects of climate stresses and pests and diseases. Were this erosion of agricultural biodiversity to continue and production of the few industrial crops that dominate the industrial food system to become dependent on a limited number of genetically uniform varieties, the results could mirror, on a global scale, the impacts of the Great Irish Famine of the 1840s. This was caused, in part, because of failure of the staple potato crop; only two varieties of potato were being planted in the whole country at that time. They turned out to be susceptible to late blight and widespread crop failure resulted.

#### It drives overuse of pesticides, destroying microbial populations---collapses the biosphere

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ABSTRACT

Soil is the Earth’s shell and is getting polluted in a number of ways in the present scenario. Human activities are the root cause of diﬀerent types of soil pollution, which is an alarming issue and has be- come a major obstacle that needs to be overcome to build a cleaner environment. The area of polluted soil is widening day by day by virtue of a sharp increase in people from all over the world. It has been expected that the global population will continue to increase up to 9 billion by 2050, and such prodigious population may be in need of advanced agricultural and industrial systems, which may inevitably cause soil pollution. Therefore, it is essential to control soil pollution, and fortunately, the solution for this is microbes that are the real creatures of life on Earth. In fact, microorganisms play a unique role in the detoxiﬁcation of polluted soil environments, and in the last several years, this process has been called bioremediation. Remediation of polluted soils is necessary, and research continues to develop novel, science-based remediation methods.

INTRODUCTION

Soil on the surface of the earth is a diverse natural entity which is home to a large amount of living elements, including plants, animals and microbes that communicate with each other (Dwivedi, 1997). Soil filters water, decomposes waste, stores heat and exchanges the gases and therefore have great bearing on environmental balance. As the life on earth mainly concentrates on the top of soil, hence, it is extremely important to pay attention on pollutants or hazardous substances affecting predominantly the soil ecosystems. In the past few years an estimated 12.6 million people have lost their lives worldwide from more than 100 diseases resulting from unhealthy environments such as contaminated soils (WHO, 2016). The formation of 1 cm top layer of soil requires 100-400 years (Chandra & Singh, 2009). Soil is the layer of mixture of inorganic and organic material, where inorganic part is composed of fine rock particles produced as a result of weathering and the organic part is produced by decay of plants and animals. Life is believed to emerge from the soil and is an integral part of the environment, ecosystem and also an important natural resource for plant growth, and is a repository for biogeochemical cycle. Soil is highly susceptible to environmental transformations (Yu, 2016) and is often the most important sink for environmental pollution due to its strong binding capacity (Sun et al., 2017). According to Ro- driguez et al. (2018), soil pollution is defined as the presence of chemicals or substances in the soil that are inappropriate or at an increased concentration than normal with deleterious effects on any non-target organism. A contaminant is an unwanted substance introduced into the environment. Harmful effects by contaminants lead to pollution, a process by which a resource (natural or man-made) is rendered unsuit- able for use. Plants, animals and aquatic life depend on soil for their survival. Plants relay upon soil for anchorage, nutrients, water and even oxygen. The soil influences the distribution of plant species and provides a habitat for a large number of organisms such as both micro and macro organisms. Soils are essential for biodiversity conservation above and below the ground. Huge amount of chemicals employed in day to day lives and excessive amounts of urban, industrial and agricultural wastes, mining etc., have all led to soil contamination across the planet and also leaving it barren and deteriorated.

Industrialization and extensive use of chemical compounds such as petroleum products, hydrocarbons (aliphatic, aromatic, polycyclic aromatic hydrocarbons (PAHs), BTEX (benzene, toluene, ethylbenzene and xylene), chlorinated hydrocarbons such as polychlorinated biphenyls (PCBs), trichloroethylene (TCE) and perchloroethylene, nitroaromatic compounds, organophosphorus compounds) pose an alarming threat to crop production, food safety, and for the health of citizens. Since soil quality is directly linked to food security, human health and sustainable economic and social progress, soil pollution management is important (Esmaeili et al., 2013; Wan et al., 2018). Biological life prevailing in a gram of soil includes tiny microbes such as algae, actinomycetes, bacteria, bacteriophages, protozoa, nematodes and fungi. The role of these organisms is highly complex and form an integral part of cycling the nutrients through the environment and they drive the processes such as decomposition, mineralization, storage and release of nutrients, breakdown of pollutants before they reach groundwater or surface water, carbon cycling, carbon sequestration, and soil organic matter transformations, nitrogen cycling (N fixation, denitrification, nitrification).

The biological transformation by the action of microorganisms led to development of abundant nu- trients (Kiflu & Beyene, 2013). Soil microbes are the principal participants of all the soil biochemical processes. These biochemical processes are devices for soil quality stabilization, soil organic matter production, hazardous material decomposition, soil structure formation and physiological cycles. Soil degradation by harmful metals reduces the microbial properties of the soil, such as soil respiration and enzymatic processes. One of the reasons that impact life in soils is the degradation of soils by highly poisonous materials attributable to multiple anthropogenic activities (Prajapati & Meravi, 2014; Zojiali et al., 2014; Baishya & Samra, 2014). Elements with high density and high relative atomic weight are inherently poisonous elements, exhibiting metallic properties such as ductility, malleability, conductiv- ity and specificity of the ligand (Algreen et al., 2012). Especially zinc, cadmium and copper are the potentially toxic elements that may alter the microbiological equilibrium of soil (Olaniran et al., 2013; Liu et al., 2013; Markowicz et al., 2016; Shi & Ma, 2017). Finally, soil contaminated by such potentially toxic elements (PTEs) has led to negative impact on the environment. In the soil microbes are the first to react to PTEs and microbial metabolisms can interfere PTE speciation change (Bolan et al., 2013).

SOURCES OF SOIL POLLUTION

Agricultural Practices

Agriculture is one of the main pillars of economy and principal productive sectors, and the main land use activity in many countries. Agriculture is a basic industry, which provides endless power for the development of national economy and it is also the foundation for human survival and development. Agricultural wastes are those produced by agricultural and livestock practices such as fertilizer containers, agricultural pesticides, feed, harvest residues, and manure. In soils and sediments, the prolonged application of pesticides persists where they can directly penetrate the food chain or percolate down to the water table. Not only in farming areas, but also in schools, parks, highways, houses, buildings and trees, pesticides are used almost everywhere and it is impossible to find any location where pesticides are not used - from the can of bug spray under the kitchen sink to the aircraft crop dusting acres of farmland. The farming activities contribute to the soil pollution with harmful substances such as cadmium by the use of mineral phosphate fertilizers or organic pollutants due to application of pesticides (Kanianska, 2016). Exploitation of chemical fertilizers and pesticides in crop production brought about soil pollution. Soil pollution is a result of long-term accumulation and a large number of pollutants accumulated in the soil, which inturn lead to the extension of pollution, such as ground water pollution. It appears to be difficult to control soil pollution. Contaminants from agrochemical sources include pesticides, fertilizers and manure. The crop protection products and fertilizers are chemicals that are manufactured synthetically and broken down into numerous soil components and they gradually bring down the fertility and quality of the soil (Usman, 2018). Pesticide is a generic term that comprises of all the chemicals used to kill or control pests either in farming sector or in different settings such as store rooms, human houses and gardens as noted by the Food and Agricultural Organization (FAO) of the United Nation (FAO, 2002). The pesticide formulations were utilized to control, eliminate and in preventing any pests, which includes rodents, nematodes, weeds, birds, insects and microbes. These chemicals are classified into herbicides, insecticides, fungicides, nematicides and rodenticides. The annual increase in world- wide pesticides production is 11% from 0.2 million tons in the 1950s and exceeding 5 million tons by 2000 (Carvalho, 2017). The chemical pesticides applied to farm field in 2012; on an average is around 3.8 million tons (FAO, 2020). About two million people chiefly, livings in the developing economies are at an elevated health risks because of pesticides utilization (Hicks, 2019). Pesticides cause damage to soil biomass and microorganisms such as bacteria, fungi, and earthworms. The labile component of organic matter in soil is microbial biomass which plays a significant role in soil nutrient element cycle (Azam et al., 2003). Quality of the soil is a major factor for the growth of crop plants and the deciding factor for the availability of plant nutrients. Microorganisms present in the soil are able to metabolize and degrade plenty of pollutants and pesticides. Healthy levels of soil microbes are essential for preserv- ing soil structure and soil fertility. The soil fungi, algae, cyanobacteria and actinomycetes are mainly involve in the decomposition of organic residues and release the nutrients including phosphorus, which enhance plant growth and contribute to the pollution control. The biological transformation by the ac- tion of microorganisms led to accumulation (develop) of abundant nutrients in the soil (Kiflu & Beyene, 2013). Pesticides may cause considerable changes in the composition, diversity and basic functioning of important soil microflora (Ahemad & Khan, 2013; Yousaf et al., 2013; Riah et al., 2014). Soil enzymes help in speedup chemical reactions in soils, regulate cellular metabolism of soil organisms, participate in the decomposition of organic matter and also play a key role in the formation of humus. The quality and fertility of soil depend to a great extent on the activity of soil enzymes. Soil enzyme activities (SEA) are sensitive to management practices (Medeiros et al., 2015).

### Big Ag Good DA---UQ

#### Conventional farming requires huge chemical inputs that destroy ecosystems and pollinators and bio-accumulate, risking extinction---it’s unsustainable---a disruptive collapse is inevitable unless a transition starts now

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We hear a lot about how we’re running out of antibiotics. But we are also doomed to run out of pesticides, because insects inevitably develop resistance, whether toxic chemicals are sprayed directly or genetically engineered into the plants.

Worse yet, weeds, insects, and fungus develop resistance in just 5 years on average, which has caused the chemicals to grow increasingly lethal over the past 60 years. And it takes on average eight to ten years to identify, test, and develop a new pesticide, though that isn’t long enough to discover the long-term toxicity to humans and other organisms.

And this devil’s bargain hasn’t even provided most of the gains in crop yields, which is due to natural-gas and phosphate fertilizers plus soil-crushing tractors and harvesters that can do the work of millions of men and horses quickly on farms that grow only one crop on thousands of acres.

Yet before pesticides, farmers lost a third of their crops to pests, after pesticides, farmers still lose a third of their crops.

Even without pesticides, industrial agriculture is doomed to fail from extremely high rates of soil erosion and soil compaction at rates that far exceed losses in the past, since soil couldn’t wash or blow away as easily on small farms that grew many crops.

But pest killing chemicals are surely accelerating the day of reckoning sooner rather than later. Enormous amounts of toxic chemicals are dumped on land every year — over 1 billion pounds are used in the United State (US) every year and 5.6 billion pounds globally (Alavanja 2009).

This destroys the very ecosystems that used to help plants fight off pests, and is a major factor biodiversity loss and extinction.

Evidence also points to pesticides playing a key role in the loss of bees and their pollination services. Although paleo-diet fanatics won’t mind eating mostly meat when fruit, vegetable, and nut crops are gone, they will not be so happy about having to eat more carbohydrates. Wheat and other grains will still be around, since they are wind-pollinated.

Agricultural chemicals render land lifeless and toxic to beneficial creatures, also killing the food chain above — fish, amphibians, birds, and humans (from cancer, chronic disease, and suicide).

Surely a day is coming when pesticides stop working, resulting in massive famines. But who is there to speak for the grandchildren? And those that do speak for them are mowed down by the logic of libertarian capitalism, which only cares about profits today. Given that a political party is now in power in the U.S. that wants to get rid of the protections the Environmental Protection Agency (EPA) and other agencies provide, may make matters worse if agricultural chemicals are allowed to be more toxic, long-lasting, and released earlier, before being fully tested for health effects.

Meanwhile chemical and genetic engineering companies are making a fortune, because the farmers have to pay full price, since the pests develop resistance long before a product is old enough to be made generically. Except for glyphosate, but weeds have developed resistance. Predictably.

In fact, the inevitability of resistance has been known for nearly seven decades. In 1951, as the world began using synthetic chemicals, Dr. Reginald Painter at Kansas State University published “Insect Resistance in Crop Plants”. He made a case that it would be better to understand how a crop plant fought off insects, since it was inevitable that insects would develop genetic or behavioral resistance. At best, chemicals might be used as an emergency control measure.

Farmers will say that we simply must carry on like this, there’s no other choice. But that’s simply not true.

Consider the corn rootworm, that costs farmers about $2 billion a year in lost crops despite spending hundreds of millions on chemicals and the hundreds of millions of dollars chemical companies spend developing new chemicals.

To lower the chances of corn pests developing resistance, corn crops were rotated with soybeans. Predictably, a few mutated to eat soybeans plus changed their behavior. They used to only lay eggs on nearby corn plants, now they disperse to lay eggs on soybean crops as well. Worse yet, corn is more profitable than soy and many farmers began growing continuous corn. Already the corn rootworm is developing resistance to the latest and greatest chemicals.

But the corn rootworm is not causing devastation in Europe, because farms are smaller and most farmers rotate not just soy, but wheat, alfalfa, sorghum and oats with corn (Nordhaus 2017).

Before planting, farmers try to get rid of pests that survived the winter and apply fumigants to kill fungi and nematodes, and pre-emergent chemicals to reduce weed seeds from emerging. Even farmers practicing no-till farming douse the land with herbicides by using GMO herbicide-resistant crops. Then over the course of crop growth, farmers may apply several rounds of additional pesticides to control different pests. For example, cotton growers apply chemicals from 12 to 30 times before harvest.

Currently, the potential harm is only assessed for 2 to 3 years before a permit is issued, even though the damage might occur up to 20 years later.

Although these chemicals appear to be just like antibiotics, that isn’t entirely true. We develop some immunity to a disease after antibiotics help us recover, but a plant is still vulnerable to the pests and weeds with the genetics or behavior to survive and chemical assault.

Although there are thousands of chemical toxins, what matters is how they kill, their method of action (MOA). For herbicides there are only 29 MOAs, for insecticides, just 28. So if a pest develops resistance to one chemical within an MOA, it will be resistant to all of the thousands of chemicals within that MOA.

The demand for chemicals has also grown due the high level of bioinvasive species. It takes a while to find native pests and make sure they won’t do more harm than good. In the 1950s there were just three main corn pests. By 1978 there were 40, and they vary regionally. For example, California has 30 arthropods and over 14 fungal diseases to cope with.

When I was learning how to grow food organically back in the 90s, I remember how outraged organic farmers were that Monsanto was going to genetically engineer plants to have the Bt bacteria in them. This is because the only insecticide organic farmers can use is Bt bacteria, because it is found in the soil. It’s natural. Organic farmers have been careful to spray only in emergencies so that insects didn’t develop resistance to their only remedy. Since 1996, GMO plants have been engineered to have Bt in them, and predictably, insects have developed resistance. For example, in 2015, 81% of all corn was planted with genetically engineered Bt. But corn earworms have developed resistance, especially in North Carolina and Georgia, setting the stage for damage across the nation. Five other insects have developed resistance to Bt as well.

GMO plants were also going to reduce pesticide use. They did for a while, but not for long. Chemical use has increased 7% to 202,000 tons a year in the past 10 years.

Resistance can come in other ways than mutations. Behavior can change. Cockroach bait is laced with glucose, so cockroaches that developed glucose-aversion now no longer take the bait.

It is worth repeating that chemicals and other practices are ruining the long-term viability of agriculture. Here is how author Dyer explains it:

“Ultimately the practice of modern farming is not sustainable” because “the damage to the soil and natural ecosystems is so great that farming becomes dependent not on the land but on the artificial inputs into the process, such as fertilizers and pesticides. In many ways, our battle against the diverse array of pest species is a battle against the health of the system itself. As we kill pest species, we also kill related species that may be beneficial. We kill predators that could assist our efforts. We reduce the ecosystem’s ability to recover due to reduced diversity, and we interfere with the organisms that affect the biogeochemical processes that maintain the soils in which the plants grow.

Soil is a complex, multifaceted living thing that is far more than the sum of the sand, silt, clay, fungi, microbes, nematodes, and other invertebrates. All biotic components interact as an ecosystem within the soil and at the surface, and in relation to the larger components such as herbivores that move across the land. Organisms grow and dig through the soil, aerate it, reorganize it, and add and subtract organic material. Mature soil is structured and layered and, very importantly, it remains in place. Plowing of the soil turns everything upside down. What was hidden from light is exposed. What was kept at a constant temperature is now varying with the day and night and seasons. What cannot tolerate drying conditions at the surface is likely killed. And very sensitive and delicate structures within the soil are disrupted and destroyed.

Conventional tillage disrupts the entire soil ecosystem. Tractors and farm equipment are large and heavy; they compact the soil, which removes air space and water-holding capacity. Wind and water erosion remove the smallest soil particles, which typically hold most of the micronutrients needed by plants. Synthetic fertilizers are added to supplement the loss of oil nutrients but often are relatively toxic to many soil organisms. And chemicals such as pre-emergents, fumigants, herbicides, insecticides, acaricides, fungicides, and defoliants eventually kill all but the most tolerant or resistant soil organisms. It does not take long to reduce a native, living, dynamic soil to a relatively lifeless collection of inorganic particles with little of the natural structure and function of undisturbed soil”.

When I told my husband all the reasons we use agricultural chemicals and the harm done, my husband got angry and said “Farmers aren’t stupid, that can’t be right!”

I think there are a number of reasons why farmers don’t go back to sustainable organic farming.

First, there is far too much money to be made in the chemical herbicide, pesticide, and insecticide industry to stop this juggernaut. After reading Lessig’s book “Republic, Lost”, one of the best, if not the best book on campaign finance reform, I despair of campaign financing ever happening. So chemical lobbyists will continue to donate enough money to politicians to maintain the status quo. Plus the chemical industry has infiltrated regulatory agencies via the revolving door for decades and is now in a position to assassinate the EPA, with newly appointed Scott Pruitt, who would like to get rid of the EPA.

Second, about half of farmers are hired guns. They don’t own the land and care about passing it on in good health to their children. They rent the land, and their goal, and the owner’s goal is for them to make as much profit as possible.

Third, renters and farmers both would lose money, maybe go out of business in the years it would take to convert an industrial monoculture farm to multiple crops rotated, or an organic farm.

Fourth, it takes time to learn to farm organically properly. So even if the farmer survives financially, mistakes will be made. Hopefully made up for by the higher price of organic food, but as wealth grows increasingly more unevenly distributed, and the risk of another economic crash grows (not to mention lack of reforms, being in more debt now than 2008, etc).

Fifth, industrial farming is what is taught at most universities. There are only a handful of universities that offer programs in organic agriculture.

Sixth, subsidies favor large farmers, who are also the only farmers who have the money to profit from economies of scale, and buy their own giant tractors to farm a thousand acres of monoculture crops. Industrial farming has driven 5 million farmers off the land who couldn’t compete with the profits made by larger farms in the area.

But farmers will have to go organic whether they like it or not

It’s hard to say whether this will happen because we’ve run out of pesticides, whether from resistance or a financial crash reducing new chemical research, or whether peak oil, peak coal, and peak natural gas will cause the decline of chemical farming. Agriculture uses about 15 to 20% of fossil fuel energy, from natural gas fertilizer, oil-based chemicals, farm vehicle and equipment fuel, the agricultural cold chain, distribution, packaging, refrigeration, and cooking to name a few of the uses.

At some point of fossil decline, there won’t be enough fuel or pesticides to continue business as usual.

Farmers will be forced to go organic at some point. Wouldn’t it be easier to start the transition now?

#### Resilience is a precondition for yield and food security.

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Competing narratives and problem framings around the governance of food security conceptualize the role of production efficiency and resilience and their interactions differently (Jiren et al., 2020; Loos et al., 2014; McMichael & Schneider, 2011). They share the perspective that food security is a complex, multidimensional concept, and that both production efficiency (often discussed as approaches to agricultural intensification) and resilience attributes influence the state of food security. They differ, however, in whether resilience attributes are understood as an additive or as an essential precondition for increasing food security (Loos et al., 2014). The impact of the recent COVID-19 pandemic on food security provides empirical evidence for the latter perspective: it has demonstrated how the efficiency of a non-redundant system and therefore food security can decrease dramatically, and how community-based systems with shorter, more direct supply chains can be much more reliable (Duguma et al., 2021; Worstell, 2020). Further, as represented by the indicator ensuring resource access and broadening participation, the concept of agroecological resilience also links to aspects of food and seed sovereignty (Kloppenburg, 2014), which are considered to be highly relevant for realizing food security (De Schutter, 2012; IPBES Food 2020). Commons-based seed production is especially strong in this regard.

Lammerts van Bueren et al. (2018) propose a framework of systems-based breeding that is directed towards achieving the international sustainability targets of food security, food sovereignty, social justice, agrobiodiversity, ecosystem services, and climate robustness. One core element of such a systems-based breeding orientation is free access to genetic resources, to allow all actors in the seed sector to access a broad genetic base of seed material (Lammerts van Bueren et al., 2018). This would challenge a key component of the conventional breeding model, but may be a starting point in building more resilient seed and agricultural systems.

6. Conclusion

In this paper, we have developed a conceptual framework to systematically examine the contribution of seed production, including breeding, to agroecological resilience. Specifically, we extended the indicator framework compiled by Cabell and Oelofse (2012) and broadened its scope by focusing on seed production – thereby developing an indicator framework that allows us to assess how different organizational approaches to seed production contribute to agroecological resilience. We showed that plant breeding and seed production affect agroecological resilience in multiple dimensions, including the characteristics of available varieties (such as genetic diversity, adaptation to specific needs and biophysical conditions) and access rights to seeds for farmers, gardeners, and breeders.

Our empirical assessment, based on a document analysis of publications from breeding and seed-producing organizations in the German-speaking vegetable seed sector, revealed the positive effects of commons structures in seed production on agroecological resilience. These include a high degree of self-organization of farmers, gardeners and breeders along the value chain of plant cultivation; the development of open-pollinated, naturally reproducible varieties; redundancy of different seed supply channels, achieved by encouraging hobby and commercial gardeners to carry out their own seed multiplication, and by establishing seed exchanges and an independent organic seed sector; and autonomy from external resource inputs such as pesticides, synthetic chemical fertilizers, and genetic sequences and technologies protected by intellectual property rights. Further, commons approaches as organizing principles improve the resilience of the governance structures of seed production by facilitating knowledge exchange and social learning, a polycentric organization of breeding, non-hierarchical decision-making structures und participatory breeding approaches. However, commons-based seed production is often threatened by insecurities regarding the long-term financing of its breeding activities, and may under optimal conditions be less productive and innovative than conventional seed production.

Positive effects of commons approaches in the seed sector on the resilience of the global agricultural and food system can be assumed, especially if an out-scaling (geographical diffusion within the niche) and up-scaling (widening of the scale of operation; Douthwaite et al., 2003) of commons-based seed and breeding initiatives is politically supported. Potential positive effects include an increase in available agrobiodiversity, the buildup of networks and close social ties among actors along agricultural value chains, knowledge diffusion and a focus on sustainable resource management. Further research could apply the framework developed in this paper to analyse seed production practices in the Global South, or to identify suitable entry points for integrating commons principles in conventional seed production.

#### Crop loss and shocks are inevitable from extreme weather, but shifting to sustainability solves

Katlyn S. Morris 16, PhD Candidate in the Department of Plant & Soil Science at the University of Vermont, and Gabriela Bucini, PhD student at the Natural. Resource Ecology Laboratory (NREL) of Colorado State University, “California’s Drought as Opportunity: Redesigning U.S. Agriculture for a Changing Climate”, Elementa Science, https://www.elementascience.org/articles/10.12952/journal.elementa.000142/

Introduction

Climate change is affecting the production and profitability of agricultural systems, and this is expected to continue in the future. Projections show increased temperatures, changes in precipitation cycles, greater frequency of extreme weather events such as hurricanes and droughts, decreased topsoil moisture, and shifting pest populations (Vergara et al., 2014). In California, USA, the sustained drought of 2011–2016 has demonstrated one such effect of climate change that is expected to be more common. Drought cost California’s agricultural industry $1.5 billion in 2014, based on losses in crop revenue, livestock value, and the cost of groundwater pumping (Howitt et al., 2014). Economic loss in California’s agricultural sector is likely to continue based on projected climate and continued water shortages.

How can these agricultural losses and costs be minimized? What examples exist of agricultural systems that withstand drought, increased temperatures, flooding, and pest pressure? What is needed to replicate these resilient farm systems, in terms of agricultural policy, economic incentives, and cultural acceptance? We argue that this moment represents an opportunity to shift the existing agricultural paradigm in the United States to plan for long-term functionality in a changing climate. Hence, California’s drought can be seen as an opportunity in that it forces consumers, farmers, and policymakers to recognize the limits to natural resource use and to transform the current U.S. agricultural policy framework. Willingness to enact necessary policy changes to avoid a food and water crisis will require public pressure and support, farmer engagement, and collaboration across different levels of governance (local, state, national) and across different sectors of government (agriculture, water, natural resources).

Focusing on water restrictions as the primary means to arrive at a target level of water use is an incomplete approach to natural resource management, one which is distracting from a more fruitful conversation about truly sustainable agriculture. Setting water use limitations based on actual recharge rates is an approach that focuses on reaching a target, but the other critical piece is to address the questions: (1) How will agriculture achieve the goal of limiting water use without compromising food production? and (2) How can farmers and land users build resilience in their system to prepare for the future? An essential move is to redesign the agricultural systems that are built upon unsustainable practices, which will require forward-thinking policies that reflect a commitment to this paradigm shift.

Below, we review examples of resilient agroecosystems around the world, many documented within the field of agroecology. We then highlight an example of agroecology applied at a national scale due to policies and support from the French government. We propose that governmental support is needed in the U.S. to help California’s agricultural sector withstand and adapt to future water shortages, and to incentivize and promote the widespread adoption of sustainable agriculture.

Agroecology and agroecosystem resilience

Agroecology is “the application of ecological concepts and principles to the design and management of sustainable agroecosystems” (Gliessman, 1998), including maximizing nutrient cycling, minimizing external inputs, and conserving soil, water and energy. Agroecology is an approach that integrates ecological science with other scientific disciplines and knowledge systems (e.g. local, indigenous) to guide research and actions towards the sustainable transformation of our current agrifood system (Méndez et al., 2013).

Complex and diverse agricultural systems are less vulnerable to extreme weather events such as droughts and floods, and thus are overall more resilient to climate change (IPES, 2016). Many agroecological practices help build stable soils, which in turn are better able to maintain soil moisture during droughts and are less susceptible to erosion from storms and flooding (Magdoff and Van Es, 2000). Soils with high levels of organic matter have higher water-retention capacity, which maximizes the water available to plants during and following rainfall events (Hudson, 1994; Altieri et al., 2015). Soil organic matter can be maintained with crop residue application, cover cropping, and reduced tillage, leading to crop yield improvements and drought resistance (Lal, 2009). The evidence that agroecological practices build climate resilience has been analyzed for coffee farms in the tropics, which are highly vulnerable to climate extremes (Morris et al., in review), and has shown that shaded coffee agroforestry systems increase microclimate control, retain soil moisture, minimize erosion, increase nutrient use efficiency, maximize yields, and provide pest and disease control. In Brazil, incorporation of crop residues on coffee farms increased soil organic matter and soil water retention capacity, reduced soil temperature, and allowed better root system distribution (Camargo et al., 2010). In Costa Rica, coffee intercropped with leguminous trees (Inga densiflora) had higher water infiltration rates and less water runoff than coffee monocultures (Cannavo et al., 2011), while in Uganda, coffee agroforestry plots had 2.6 t C/ha more soil organic Carbon and significantly higher bulk density than coffee monocultures (Tumwebaze and Byakagaba, 2016).

Agroecology for resilience

Resilience refers to a system’s capacity to rebound after absorbing a disturbance (Cutter et al., 2008). Resilience can be viewed as an outcome, in which a system or population is able to cope with a hazard, or a process in which learning is continually applied to improve decisions and capacity. Coping capacity is the ability to respond to an occurrence of harm and to avoid or minimize negative effects (Saldaña-Zorrilla, 2008). Coping strategies may provide immediate relief but are not long-term adaptation strategies. Adaptive capacity is the ability to gradually transform in order to adjust to change. A key element of increasing the adaptive capacity of farms is building agroecosystem resilience to withstand climate extremes, such as drought and floods, and to maintain or recover their productive capacity with limited losses and costs. Many farmers around the world cope with and prepare for climate change by incorporating agrobiodiversity and soil conservation practices. They minimize crop loss through increased use of drought tolerant local varieties, water harvesting, mixed cropping, agroforestry, and soil conservation practices (Altieri and Toledo, 2011). Agricultural biodiversity helps cushion farms from shocks such as extreme weather events (Jarvis et al., 2007). Incorporating spatial and temporal diversity on farms can enhance beneficial biotic interactions and support a suite of ecosystem services beyond simple short-term production (Kremen et al., 2012; Mijatović et al., 2013). These ecosystem services, including erosion control, microclimate control (Laderach et al., 2010), pollination (Ricketts, 2004), and pest control (Scherr and McNeely, 2008) serve to support and sustain the healthy functioning of agroecosystems (Tilman et al. 2002).

Observations of agricultural resilience in the last several decades reveal that farms with healthier soils and higher agricultural biodiversity are better able to rebound after extreme climatic events. Cover cropping, the application of compost or manure, no till, agroforestry, fallow periods, and riparian buffers accumulate soil organic matter, increase soil water-holding capacity, and thus increase drought resistance for crops (Kremen and Miles, 2012). A 21-year study in Switzerland showed 20–40% higher water-holding capacity in organically-managed soils than conventionally-managed soils (Maeder et al., 2002). A 31-year field trial in Ontario demonstrated that increasing the complexity of crop rotations and minimizing tillage resulted in more consistent yields in periods of extreme weather conditions (Gaudin et al., 2015). A study conducted in Central American hillsides after Hurricane Mitch showed that farmers who used agroecological practices such as cover cropping, intercropping and agroforestry had 40% more topsoil on average and experienced 49% lower incidence of landslides than their conventional monoculture neighbors (Holt-Gimenez, 2002). In Chiapas, Mexico, more vegetatively complex coffee farms suffered less landslide damage from Hurricane Stan than simplified systems (Philpott et al., 2008). Diversification of a corn-soybean rotation to include perennial crops in the U.S. Corn Belt resulted in soil and water conservation and soil nutrient retention, as well as a reduction in agrochemical use without effects on yield or profitability (Liebman et al., 2013). These examples demonstrate the potential for agroecological practices to increase farm resilience.

### Big Ag Good DA---AT: Avery

#### Avery’s a hack who lies

Dr. Robert Hatherill 2k, and Jeff Nelson, no date given but at least February 2K. Research toxicologist at the Environmental Studies Program at University of California at Santa Barbara, Chief Scientific Advisor to EarthSave International and President of VegSource Interactive. “Organics: The Blurred Vision of ABC's 20/20,” VegSource, http://www.vegsource.com/articles/organics.2020.htm.

Mr. Avery's employer, the Hudson Institute, is a duplicitous, non-profit "watch dog" group that serves as a mouthpiece for big business. Hudson identifies many of its corporate sponsors on its website, including AgrEvo, Dow AgroSciences, Monsanto Company, Novartis Crop Protection, and Zeneca - the very companies whose bottom lines are most threatened by organic agriculture. Mr. Avery is also a member of the American Counsel on Science and Health (ACSH), another chemical, pharmaceutical and food industry-funded PR organization, which specializes in orchestrating media assaults on scientists and activists who take positions contrary to the interests of ACHS funders. ACSH asserts, for example, that trans-fatty acids pose no health risks, and they champion everything from red meat to pesticides and genetically modified foods (GMOs) - even Ritalin and junk food for kids. They try to debunk the link between the standard American diet and cancer, and claim that global warming doesn't exist or is of no real concern. In short, 20/20 failed to reveal that the anti-organic "expert" they presented has strong ties to business interests in the organic debate, and a vested interest in promoting the use of herbicides, pesticides and GMOs. In his 1996 book, The Betrayal of Science and Reason: How Anti-Environmental Rhetoric Threatens Our Future, celebrated scientist Paul Ehrlich, Bing Professor of Population Studies and Professor of Biological Studies at Stanford University, details the current scheme whereby industry-paid pitchmen promote highly questionable, discredited - or sometimes non-existent - studies to try to minimize the seriousness of environmental problems. Ehrlich cites ACHS and specifically Avery as purveyors of what he terms "brownlash" - the practice of "distorting or misstating research findings" in an attempt to "fuel a backlash against 'green' policies."

#### He literally makes up evidence

Karen Charman 99. New York-based investigative journalist specializing in agricultural, environmental, and health issues. “Saving the Planet With Pestilent Statistics,” Center for Media and Democracy’s PR Watch Newsletter 6.4, http://www.prwatch.org/prwissues/1999Q4/avery.html.

Dennis T. Avery, author of the tract "Saving the Planet with Pesticides and Plastic," proudly describes himself as a missionary. His mission: to protect and promote "high-yield farming to save wildlife." Besides writing a nationally syndicated weekly column for the financial newswire Bridge News, Avery is also the director of the Hudson Institute's Center for Global Food Issues. He travels the country and the world preaching his gospel of biotechnology, pesticides, irradiation, factory farming and free trade. According to Avery, it is the greenies and "organic frenzies" who threaten the world with famine and loss of habitat for their sacred wildlife. Why? Because farming without synthetic pesticides, petrochemical fertilizers and biotechnology would require too much land. Avery sees no problem with agricultural pollution, be it groundwater contamination, pesticide and fertilizer runoff, or even the mountains of stinking manure produced by the huge cattle, chicken and hog operations that plague increasing numbers of rural communities. He denies that there is any link between pesticides and cancer or other illnesses. In fact, he says, organic food is what will kill you. Last fall Avery began claiming that "people who eat organic and 'natural' foods are eight times as likely as the rest of the population to be attacked by a deadly new strain of E. coli bacteria (0157:H7)." This happens, he says, because organic food is grown in animal manure, a known carrier of this nasty microbe. He says his data comes from Dr. Paul Mead, an epidemiologist at the U.S. Centers for Disease Control (CDC), the federal agency that tracks outbreaks of foodborne illness. Avery continues delivering this message with op-eds that bear titles such as "The Silent Killer in Organic Foods" and "Wallace Institute Got it Wrong: CDC Data Does Indicate Higher Risk From Organic and Natural Foods." These editorials are disseminated by Bridge News to between 300 and 400 newspapers throughout the country and approximately 500,000 other subscribers here and abroad including government departments, central banks and businesses. I heard Avery's sermon live in June 1999 at the National Agricultural Biotechnology Council meeting in Lincoln, Nebraska. After his talk I asked him why he quoted the CDC as the source of his information when they deny having data attributing E. coli 0157:H7 outbreaks to organic food. He accused CDC of engaging in a "cover-up" due to pressure from environmentalists. Back home I noticed more than a couple of similar stories popping up in various venues. One particularly sloppy story, titled "Organic Food Creates Higher Risk for Food Poisoning," was posted on August 25, 1999 on USDA's National Food Safety Database by US Newswire, a service that electronically disseminates news releases. Though this story doesn't quote Avery, it quotes the CDC's Foodborne and Diarrheal Diseases Branch chief, Dr. Robert Tauxe, saying, "Organic food means a food was grown in animal manure." Tauxe denies ever making that statement and says he believes the rumor originated with Dennis Avery. After fielding numerous media queries on the subject, CDC took the unusual step on January 14, 1999 of issuing a press release stating, "The Centers for Disease Control and Prevention has not conducted any study that compares or quantitates the specific risk for infection with E. coli 0157:H7 and eating either conventionally grown or organic/natural foods." In addition, Tauxe says he called Avery to tell him to stop claiming that the CDC was the source of this allegation. Avery responded by telling Tauxe, "That's your interpretation, and I have mine." Avery's newest version of what happened with the CDC is that Dr. Paul Mead, an epidemiologist who works in Tauxe's division, gave him the information. Absolute bunk, says Mead. "What happened is that he called me up and announced that eight percent of the outbreaks of foodborne illness were from organic food. I took some exception to that and said I didn't know him and what his purpose was, but our data don't support that." Mead was chagrined to hear that a year after this conversation took place, Avery is still sourcing this phantom data back to him. Contrary to Avery's claim, E. coli 0157:H7 contamination from manure is less likely to occur on organic farms than in the factory farming system that Avery supports. Fred Kirschenmann is an organic farmer and board chairman of the private organic certification company Farm Verified Organic. He points out that a single cow produces approximately 10 times as much fecal matter as a human being. This means that a feedlot of, say, 5,000 head of cattle would produce the same amount of manure as 50,000 people. Yet modern conventional agriculture does not regulate the use of raw manure in food crops, Kirschenmann says, and farmers are spreading increasing amounts of it on their fields because it is too expensive to truck away and they don't have anywhere else to put it. Kirschenmann serves on the National Organic Standards Board which was charged by Congress to advise the USDA in formulating its legal standards defining organic food. "In organic systems, most animals have to have access to pasture, so they can't be concentrated in huge feedlots," he says, adding that Avery's charge that organic food is grown in manure is misleading, at best. "Organic farmers use manure, but virtually every certification organization I know of doesn't allow raw manure. Raw manure must either be composted or applied long enough in advance that the bacteria is no longer active," he said, adding that this requirement is being written into USDA's proposed rules. Dr. Robert Elder, a research microbiologist at the USDA's Meat Animal Research Center in Clay Center, Nebraska, specializes in measuring E. coli 0157:H7 in cattle. He says this deadly bacteria could be prevented from contaminating meat carcasses before they are ground into hamburger. "If you took meticulous time with every single carcass to vigorously clean it, scrub it, and wash it down, you could probably eliminate it," he said. But, Elder added, considering that the bigger plants are processing 3,000 to 4,000 animals a day--about 300 an hour--adequate cleaning is impossible. And that is a huge problem for the public. Elder's soon-to-be published research shows that in the summertime, when E. coli 0157:H7 levels peak, 80 to 100 percent of the feedlot cattle he tested carried the deadly 0157:H7 strain. Despite a public debunking of Avery's statements in the New York Times last February, his bogus claims continue to spread and appear to be gaining momentum. U.S. newspapers like the Las Vegas Review-Journal, Investor's Business Daily, and the Journal of Commerce have run stories about killer organic food. The story has also made its way to Canada and Europe, under headlines such as, "Organic just means it's dirtier, more expensive," "Organic food--'It's eight times more likely to kill you'" and "Organic food link to E. coli deaths." Even E. coli expert Rob Elder said he wouldn't eat organic food or feed it to his family because it was more pathogenic. When I asked where he got that information, he sent me a copy of an Avery piece, "Organic food? No thanks!" that appeared in the Wall Street Journal last December. Upon further questioning, Elder said a colleague had given it to him and said that Avery worked for the CDC, so he thought it was a credible source. I asked Sally Heinemann, the editorial director of Bridge News, if its syndicated columnists had to meet any particular criteria and whether Bridge checked the accuracy of Avery's columns. Instead of answering, she began shouting, "Who are you? Who do you represent? What do you really want to know? Go find it on the web!" before slamming the phone down. Avery says he can pretty much say what he likes, because he works for himself as an economic forecaster to farming organizations and doesn't have to worry about anybody firing him. Referring to his past employment with the US State Department and USDA, he adds: "I have full federal retirement, and I already own the prettiest small farm in America." He considers the $35,000 a year he gets from the Hudson Institute to be very little, and says he only needs money "to carry on the mission." Avery acknowledges that Hudson is corporate-funded. Looking over the roster of companies that have supported its work--agrichemical heavyweights like Monsanto, Du Pont, DowElanco, Sandoz and Ciba-Geigy and agribusiness giants ConAgra, Cargill, Procter & Gamble, among many others--Avery likely has no reason to fear the axe. His mission is their mission.

### Big Ag Good DA---AT: Crop Disease

#### Diversity’s the only way for ag to resist crop disease

Mark Schapiro 18, Lecturer at the UC Berkeley School of Journalism, award-winning investigative journalist and author specializing in the environment, “2. Genetic Vulnerability: How We Got Here,” Seeds of Rebellion: The Fight to Save Our Food Supply, Hot Books, 2018, pp. 28–48

THE NATIONAL ACADEMY of Sciences report on the 1970 corn blight was scathing in its assessment of who was responsible for the mounting dangers to our food system. It wasn’t due to the usual ebb and flow of good years and bad years, to the plant vulnerabilities that have been with us since the beginning of agriculture. Rather, responsibility lay with the actions of humans, specifically those with authority in Congress who had been steering us toward evermore monochromatic agriculture with subsidies, insurance programs, and tax incentives. “This uniformity,” they concluded, “derives from powerful economic and legislative forces.”18 They pointed toward a perverse equation: the larger the farm, the less variety in the seeds cultivated into food. What happened to Fred McLain and thousands of other corn farmers, they warned, could happen again.

By the time the Academy issued its final report, Vavilov had been dead for thirty years. He was ultimately, tragically, trapped by his own enthusiastic collaboration with Western scientists. Accused of “bourgeois” sympathies, he was arrested by Stalin’s policemen twenty years after his meeting with Luther Burbank and died in prison nine months later.19 Struggling financially over his lifetime, Luther Burbank advocated for a patent law to protect his botanical creations. A version of the law that Burbank advocated in his later years, the Plant Patent Act, was passed in 1930, four years after his death, and signed by President Herbert Hoover. It permitted the patenting of asexually created plants—new varieties created with grafts and cuttings, which is how Burbank did most of his work. It came nowhere near the expanded level of patent protections for sexually reproducing plants instituted by Congress some fifty years later, which would open the door to the seed industry we see today.

What neither man could have possibly foreseen was the extent to which, over the decades to come, the seeds and the knowledge they had shared with the world and with their fellow scientists would be deemed some of the world’s most valuable intellectual property and locked behind patent laws. Neither could they imagine the idea of obtaining genetic material from an unrelated species—a salmon for example—and inserting it into the DNA of corn, soybeans, or strawberries in order to create a single desired trait.

Nor could they have had the slightest inkling of the challenges we’d face almost a century later from climate change. These were the early days of internal combustion engines and no one was thinking of the collateral damage these transformative inventions would have on the balance between water, sun, and soil that is the basis for growing food.

The two may have been long gone, but they might as well have ghost- written the Academy’s recommendations. Among the most notable: to avoid another corn blight or similar crop epidemics, the United States should broaden the gene pool for all crops, encourage the broad dissemination of different seed varieties, and preserve native and wild varieties as source pools of future variation. These measures, the Academy said, were the tools we needed to avoid a repetition of what happened to Fred McLain and thousands of other corn farmers. It would give agriculture more resilience to deal with changing environmental conditions, diseases and pests, and a more deeply rooted food security.

Since then, practically every major step taken by the United States has sent the country in the opposite direction. Step by step, more and more seeds are being pushed off the land where they’re intended to grow and, as a last resort, into the cold vaults tucked into the mountains of Norway or the campus of Colorado State.

### Big Ag Good DA---AT: Yield Link

#### Homogenous seeds don’t boost yield

Mark Schapiro 18, Lecturer at the UC Berkeley School of Journalism, award-winning investigative journalist and author specializing in the environment, “5. Genetic Roulette: Engineering the Seed,” Seeds of Rebellion: The Fight to Save Our Food Supply, Hot Books, 2018, pp. 75–94

LACK OF GMO YIELD BONUS

From the beginning, genetically engineered seeds were presented as something of a magic bullet to increase food production for a rising global population. Genetic engineering, according to the industry’s trade association, BIO, will “increase crop yield and farmer income.”

The National Academy of Sciences set out to document the overall impacts of genetically engineered crops. One matter they addressed was whether the new technology resulted in increased yields beyond those that would have happened anyway. Yields per acre were already increasing before the onset of GMOs, so a key question was whether the yields of genetically engineered crops were increasing at a quicker rate than the yield increases of conventional crops. Did the use of GMOs make a difference in the quantity of food grown? The Academy’s answer was contained in a 380-page report released in May 2016: there was no discernible difference between the two. GMOs, they said, had neither a negative nor positive impact on yields when compared to the performance of conventional (i.e. non-GMO) crops. There was no evidence, they reported, “that the average historical rate of increase in U.S. yields of cotton, maize and soybean has changed.”17

The Academy also considered the association of GMOs with agri- chemicals. They noted two contrasting trends: herbicide use has dramatically increased on genetically engineered soybeans, but on corn fields which contain the engineered Bt bug poison, pesticide use has significantly decreased (a trend that is slowing as pest resistance grows).

Several months after the Academy weighed in, the New York Times followed up with a detailed investigation into the yield question, and compared the relative productivity of farms in the United States and Canada, where the use of genetically engineered seeds is widespread, and farms in France and Germany, where they are, for the most part, forbidden. The newspaper also found no difference in the rate by which yields increased on farms growing genetically engineered corn in the United States and non-GE corn in France; the same was true for rapeseed, used for canola oil.18 Similarly, a study from the University of Canterbury, New Zealand found that corn and canola yields were actually rising much quicker on non-GMO farms in western European countries than on farms using GMOs in the United States and Canada. They surmised that, “Europe has learned to grow more food per hectare and use fewer chemicals in the process. The American choices in biotechnology are causing it to fall behind Europe in productivity and sustainability.”19 The study helped the government of New Zealand determine whether the country would follow the United States or the far warier European approach to GMOs. They opted for the latter; New Zealand maintains one of the world’s most rigorous regimes governing the importation or cultivation of GMOs.20

#### Food sovereignty has a far greater impact on hunger reduction than increases in yield.

Mark Schapiro 18, Lecturer at the UC Berkeley School of Journalism, award-winning investigative journalist and author specializing in the environment, “8. Seeds: The Elephant and the Acorn,” Seeds of Rebellion: The Fight to Save Our Food Supply, Hot Books, 2018, pp. 141–149

TALK ABOUT SEEDS long enough and you’ll meet the elephant in the room—the specter of hunger. Can we produce enough food for the earth’s growing population? As the Biotechnology Innovation Organization, the bio tech industry’s trade group, puts it: “To feed everyone, we’ll need to double the amount of food we currently produce.”1 That formulation is pretty much a mantra for every one of the group’s agri-business company members. A “starving African,” somewhere, has in various forms been the meme for explaining why the end goal of all agriculture is maximizing yield no matter the consequences.

But shaping the challenge like a Malthusian equation—more food for more people—is also a dodge around the far more fundamental question: Who eats the food that is produced? For whom do the seeds of the world toil?

The quantity of food grown from the world’s seeds has little bearing on who eats it. From New York hedge funds to Chinese banks to sovereign wealth funds of the Middle East, big money is moving not only into seeds, but into agricultural land. Millions of fertile acres in Africa and Asia are being diverted into export plantations to feed the people in the richest countries.2 Large populations of the officially “under-nourished” in Africa, Asia, and Latin America live within striking distance of large farms devoted to exporting vegetables and fruits to the United States, Europe, the Persian Gulf states, and China.

North Americans need not go far to see the inequities of food distribution in action. One of the most food insecure areas in the United States is the country’s biggest center of fruit and vegetable production: California’s Central Valley. Amidst abundant fields of fruit and vegetables, low-wage farmworkers are frequently unable to afford the food that they pick, and one in three children in some of the agricultural towns there go to bed hungry.3 Across the United States, countless billions of corn seeds—40 percent of them—give birth not to food for humans, but food for automobiles, in the form of ethanol.4 Another third of corn and other grains, it pains me to say as a devoted omnivore, is devoted to feeding livestock, not people.5 More are turned into processed foods—chips and soft drinks and sugared cereals and so on—which offer little nutritional value and contribute to rising rates of obesity. Thanks to the wide discrepancies between seeds planted and food consumed, more than fifteen million US households, in one of the wealthiest countries on earth, are considered “food insecure.”6

In developing countries, the primary reason for 795 million people being officially “under-nourished,” according to the FAO, is not the inadequate quantity of food being produced. Rather, it’s what the FAO calls “less inclusive economic growth.”7 That’s diplo-speak for the unequal distribution of resources—in this instance, the most essential of all resources, food. Hungry people are often surrounded by food—on farms, in shops, and in open markets—but can’t access it.

The United Nations special rapporteur on the right to food, deputized by the UN General Assembly to fight hunger, vigorously disputes the assertion that the seed-chemical nexus is necessary to feed the growing global population.8 The organization responsible for ensuring that millions of hungry people actually do have enough to eat—and which has no financial incentive to promote one agricultural model over another—says that there’s plenty of food produced to feed several billion more people than our current global population of seven billion. In early 2017, the rapporteur released a report accusing the companies that manufacture pesticides—the very same companies that manufacture seeds—of “systematic denial of harms,” of “aggressive, unethical marketing practices,” and obstructing efforts by governments to apply more substantive oversight of their use.9 Meanwhile, the devastating health toll taken by agri-chemicals continues to mount—two hundred thousand deaths a year from acute chemical poisoning, according to the World Health Organization, and that’s just talking about humans, and not the complex web of creatures and micro-organisms that live in and around farms. Such systemic chemical poisonings are most directly suffered by those who are doing the work to provide food to others.

“The ‘food problem’ is not a production problem,” says Eric Holt- Gimenez, executive director of Food First, an NGO that probes into the underlying causes of hunger. “It’s a problem of income. There’s not a ‘food’ problem, there’s a poverty problem.”

The journalist Michael Pollan, whose writing and reporting helped lay the groundwork for the global food movement, says that financial props actually encourage farmers to over-produce, which help commodity companies keep prices low. “Everybody’s convinced that agriculture is a scarcity economy,” he told me. “That’s a big myth. The question is, who eats what?”

So, the question of which seed to plant—or for most of us, far more precisely, which seeds others plant on our behalf—is not a matter of deciding between which food-stressed person we hope to help feed. Deciding which seeds to plant is a decision about what kind of agriculture will be used to grow and cultivate them into food. As Talavai Denipah- Cook, a member of the Hopi tribe who handles ecological matters on the Ohkay Owingeh Pueblo in New Mexico, told me: “The seed is not just the seed. It’s how you plant, it’s how you treat the soil you plant it in. And once you start, it becomes how do you live on the earth.”

The one-eyed focus on yield to the exclusion of other factors has led to practices which degrade the conditions on which the long-term vitality of our agriculture depends. For decades, the deck has been stacked. Industrial agriculture interests have benefitted from billions of dollars in public funds for research and development, and billions more for insurance policies in case the strategies don’t work. There are, however, other practices, which begin with more organically rich soils and seeds that interact with the ecological homes where they’re planted, which have been shown to be far less destructive to the earth’s ecological and atmospheric balancing act, and far more resilient to the tumultuous changes underway in our food growing lands.

Those who argue that we must jump on the chemical-seed treadmill in order to “feed the hungry” are using it as a moral fig-leaf, diverting us from the fundamental matter of distribution of the food we already produce. Food security is not an issue of quantity, but of location—meaning one’s location on the geographic map and on the socio-economic ladder.

#### Yield-only focus is stupid. Stability of output matters too. That’s higher in the aggregate over time for systems that are diversified to include local varieties.

Anoush Ficiciyan et al. 18, Agroecology, Department of Crop Sciences, University of Goettingen, “More than Yield: Ecosystem Services of Traditional versus Modern Crop Varieties Revisited,” Sustainability, vol. 10, no. 8, 8, Multidisciplinary Digital Publishing Institute, 08/2018, p. 2834

3.1. Provisioning Services

3.1.1. Crop Yield

Twenty-six studies used crop yield as a response variable comparing landraces against modern varieties: one conceptual paper, seven surveys among farmers, and 18 experimental approaches testing varieties. Among these 26 publications, a positive effect of landraces on crop yield was found nine times, a negative effect eight times, and an unclear effect nine times. Stability of crop yield is a major economic value, in particular under harsh and changing environments and plays a key role for food security [40,49].

(1) Findings from field experiments

Results from the 18 publications on field experiments show that landraces tend to produce fewer yields than modern varieties if environmental conditions are optimal. Lafitte et al. [35] show for example that improved maize varieties had on average 56% higher yields (independent of N-levels). Kante et al. [33] also showed that mean yields for F1-hybrids varieties were 3 to 17% (ranging from 60 to 28 kg/ha) higher across different environmental conditions compared to local landraces.

In contrast, Maggs-Kolling et al. [37] found that the yield of watermelon landraces in Namibia was higher than that of modern varieties. Landrace varieties of water melon produced smaller, less sweet fruits with larger seed, and a thicker rind compared to modern varieties, attributes which are considered positive by local people. Under non-optimal farming conditions, results from field experiments show that landraces tend to yield the same or even higher than modern varieties. These trends are confirmed by Noguera et al. [50] for rice. They found that local landraces are highly adapted to harsh environmental conditions and respond well in biomass to earthworm application. However, they cannot compete with modern varieties in terms of rice grain biomass under optimal conditions. In Burkina Faso, farmers have a strong interest in sorghum landraces due to their ability to produce secure and stable yields in the face of unpredictable climate conditions [31]. Field experiments from semi-arid and arid regions of South Asia and Africa comparing pearl millet landraces against modern varieties also showed that landraces yielded significantly more grain under drought stress than modern varieties [30]. Annicchiarico, P. [39] documents the high provisioning value of lucerne landraces in Italy in comparison to modern varieties in terms of forage yield. Farmers chose landraces for sandy soils in their region due to a lower winter mortality of landraces. Olson et al. [17] tested factors that influence farmers’ choices between landraces and modern varieties of maize for small-scale coffee farms in El Salvador. Yields in plots planted with modern varieties were significantly higher than yields in plots planted with landraces. However, landrace varieties were more commonly planted on steep slopes compared to modern varieties, suggesting negative effects of the slope rather than seed type appeared to drive the yield difference. Slope was negatively correlated with yield for both seed types, while other analyses showed that yield between modern varieties and landraces did not differ [17].

(2) Findings from farmer surveys

Farmers’ perceptions of yield differences between landraces and modern varieties were also studied. Li et al. [32] and Knezevic-Jaric et al. [51] compared via farmer interviews the yield of landraces with the yield of F1-hybrid varieties and concluded that F1-hybrids provide higher yield. Li et al. [32] found that 71% of the respondents within their survey among small-scale farmers in China mentioned the yielding qualities of F1-hybrid varieties compared to landrace varieties, but only 4% of them increased their final income by adopting F1-hybrids due to additional costs for inputs such as pesticides and fertilizers. The farmers also reported that the maize F1-hybrids were not adapted to upland and infertile land and that weather variation as well as pest and diseases easily influenced the yield. Sixty-two percent of the interviewed farmers considered landraces better adapted to the local conditions leading to a more stable productivity. A similar outcome was reported from Serbia [51] where commercial maize F1-hybrids are increasingly used since they offer higher yields in shorter time frames. However, interviewed farmers mentioned that even if the yield of maize landraces is lower they still show higher production stability under changing environmental conditions. Farmers in Northeast Turkey were found to prefer Kirik, a local landrace wheat variety, over modern wheat varieties, even if the suggested yield of modern varieties was higher [52]. This is because, unlike modern varieties, landraces (especially Kirik) can sometimes be sown twice per year, in spring and autumn, giving the farmers a flexibility to match seasonal changes and a higher level of protection against extreme agronomic conditions [52].

3.1.2. Crop Nutrient Use Efficiency

The crop nutrient use efficiency describes the capacity of a variety to use available soil nutrients in an efficient way [34]. We found six studies (five experiments and one conceptual paper) that use crop nutrient use efficiency as a response variable comparing landraces against modern varieties. In terms of maize landraces, Lafitte et al. [35] found that landraces have a higher capability to use available nitrogen (N) under limited N-levels compared to modern varieties and therefore, perform better in N-limited environments, although modern varieties outyielded landraces under optimal farming conditions. Sangabriel-Conde et al. (2014) [34] conducted a greenhouse experiment evaluating the response of maize landraces and a F1-hybrid maize variety to arbuscular mycorrhizal fungi under different phosphorus (P) levels. Results show that local landraces interacted better with mycorrhiza resulting in an enhanced P-uptake. P acquiring capacity of the F1-Hybrid is severely lower than those of some landrace varieties, despite a high mycorrhizal dependency. According to Sangabriel-Conde et al. (2014) [34] some landraces appear to have adaptive mechanisms to obtain P more efficiently, a trait important in milpa cultivation systems [34]. In contrast, Fang et al. [36] (2014) provide evidence that modern breeding towards greater and more stable yield can also promote water use efficiency. Hence, modern varieties may overtake landraces even under environmental stress [36].

3.1.3. Cultivation Effort and Crop Storability

Many factors influence farmers’ working time and how it is affected by a certain crop variety. The timespan of the growing period, the time spent for crop storage minimizing losses from pest infestation or decay, and finally the time spent on field during the growing period was dealt with in four studies. They analyze the farmers’ time required during cultivation and the storability of the harvested crops for different varieties, with three studies reporting results from field experiments and one survey among farmers. In one publication, local landraces were connected with a higher required time because of additional work for seedbeds for landraces [53]. The other studies (n = 3) state a positive or unclear effect of landraces on the time of required work during cultivation and the storability of the harvested crops. As an example, watermelon landraces could be stored up for more than 12 month in the shade, while the storability of modern varieties was limited to just a few weeks [37]. Anastasi et al. [54] mention the earliness of sesame landraces as a useful trait in semiarid environments, because it shortens the cropping cycle, reduces water use and makes the field available sooner for the next crop. Moreno et al. (2006) [38] analyzed how different landraces and modern varieties affect crop storability for small-scale farmers in México and found that they have more problems with pest infestation in case of modern varieties than landraces. One third of farmers does not report high levels of storage losses to insects when using their local landraces, and do not see the need to implement pest control measures.

3.1.4. Context Dependency of Provisioning Ecosystem Services

The yield outcome of landraces and modern varieties appears to be contingent on local environmental conditions. Modern varieties have often higher yields, which may be much reduced under harsh local conditions. In contrast, landraces are a trusted, resilient and successfully cultivated seed/crop source of reliable yields for many small-scale farmers around the globe. This applies especially to the nutrient-use efficiency of the crop and the storability of harvested crops. Therefore, landraces should be considered for their production potential in marginal areas and as genetic material for the future, even if modern varieties yield better under optimal farming conditions [30,55,56]. Both landraces and modern varieties have merit, and the right variety choice depends on the site-specific conditions, since it is impossible to find all desired performances realized in a single variety [57]. Crop variety selection needs to take advantage of a portfolio of (agronomic) performances corresponding to different land qualities [32].

3.2. Regulating Services

3.2.1. Resilience to Environmental Changes

High yields from landraces are in most cases directly connected with their ability to sustain under local environmental changes or sub-optimal farming conditions. Out of the 24 publications on resilience to environmental changes, we found seven surveys among farmers, three conceptual papers, and 14 publications experimentally testing varieties against each other, in the categories positive effects (n = 22), negative effects (n = 1), and unclear (n = 1) respectively.

(1) Findings from field experiments

Eleven out of 14 publications reporting results from field experiments found positive effects of landraces compared to modern varieties under sub-optimal farming conditions. In one publication, the authors conclude that resilience capacity is unclear, and one study detected a negative effect. A merit of landraces in comparison with modern varieties is their ability to use limited water resources more efficiently and therefore be better adapted to drought stress [39,58,59]. For example, pearl millet landraces yielded significantly more grain when the plants were under drought stress compared to modern varieties, while crosses of landraces with modern varieties resulted in the highest mean “Drought Response Index” based on flowering and grain yield [30]. With this index, Yadav [30] quantifies that landraces are more productive than modern varieties under poor or changing water conditions and should especially be considered as gene material in breeding for water stress resilience. In the case of maize landraces they yielded poorer under optimal conditions, but often performed similar to, or even better under stress conditions [40]. In general, under severe water stress, a more stable prolificacy of landrace varieties may compensate for lower yields. Therefore, landraces should be considered for breeding and production in areas with non-optimal farming conditions [40]. Furthermore, Leiser et al. [60] detected that photoperiod sensitive landraces showed better P-tolerance and less delay of heating under P-limited conditions for grain yield compared with modern varieties. Dry beans and watermelons led to comparable results in that landraces outperformed modern varieties under stress [37,41]. The only study that detected a negative result of landraces comparing old, modern and newly released varieties was the case of winter wheat varieties, showing that improved and newly released varieties consume more soil water during anthesis (compared to landraces) under drought stress conditions, leading to higher yields [61].

(2) Findings from farmer surveys

Responses from surveys among farmers to the resilience of a variety to environmental changes proved a generally high valuation of landraces compared to F1-hybrids or modern varieties. Strikingly, in China, steadily fewer households use maize landraces [32]. In the two Chinese provinces Guangxi and Yunnan, the area cultivated with landraces decreased significantly from 65% to 7% and from 84% to 18%, respectively, between 1998 and 2008. This reduction was accompanied by a rapid expansion of F1-hybrids of maize, especially in Guangxi, where the area under hybrids reached up to 93%. Seventy-one percent of the farmers were positive about the F1-hybrid yields, but still, 54% of them also indicated that they are concerned about the yield stability of F1-hybrids due to uncertainties about the performance by weather extremes, high pest and disease infestation levels. Sixty-two percent of the farmers considered maize landraces as better adapted to their local conditions, offering more stable productivity. In Serbia, respondents claimed that old maize varieties mature earlier, an attribute that is considered positively, and are more resistant to unfavorable environmental conditions such as drought [51]. In El Salvador, farmers stated that landrace seeds are more pest resistant. In focus groups the respondents explained landrace seeds as generally “stronger,” having “stronger roots” and F1-hybrid seeds as “more prone to rotting” and “less resistant to rain” [17]. Despite an increased introduction and supply of modern maize varieties in the Yucatan Peninsula (México), farmers maintained a substantial amount of traditional maize varieties over 12 years and still plant more than three quarters of milpa, which is a crop mixture of corn, legumes, and squashes (see Figure 1) [62] with traditional varieties [42]. Also, in the Catalan Pyrenees, farmers prefer potato landraces to modern varieties due to their higher adaptability to the local climate and pests [53]. In Ethiopia, several local potato varieties were preferred over new ones even for yield, since they are well adapted to the particular agroecological zones. Additionally, they may serve as valuable resources for further variety improvement [57].

[FIGURE 1 OMITTED]

3.2.2. Biological Pest and Disease Control

Biological pest and disease control emerges as an important performance in the literature changing with variety selection (n = 10). We found 5 farmer surveys, 2 conceptual papers, and 3 publications experimentally testing landraces against modern varieties. These papers found positive (n = 6), negative (n = 2), and unclear (n = 2) effects respectively. Sánchez-Martin et al. [43] showed that oat landraces maintain high levels of resistance against rust, and their degree of infestation was generally 25% lower than that of modern varieties. Similar effects were also cited for sorghum landraces, where F1-hybrid varieties entail good yield potential, are weaker in combining the performance for yield with resistance against pests and diseases such as shoot fly or charcoal rot [44]. In the case of maize landraces, results from field experiments demonstrate that landraces have a higher degree of plant defense mechanisms like herbivore-induced plant volatiles, an advantage in defending themselves against pest damage [45]. This performance only occurred in certain landraces and was undetectable in the tested F1-hybrid varieties. The landraces attracted not only egg parasitoids but also larval parasitoids [45]. Tamiru et al. [45] conclude that these defense traits of plants against herbivores may have been lost over time due to crop breeding toward high yields at the cost of other traits.

When farmers were asked about the ecological benefits of landraces over modern varieties, most argued that landraces are better adapted to the local environment and are more resistant to pests and diseases [17]. For instance, farmers had no problem with the potato beetle (Leptinotarsa decemlineata) before the implementation of modern potato varieties. This pest resistance, in combination with other benefits, was the reason why almost 90% of the respondents preferred landraces to modern varieties [53].

3.2.3. Biodiversity Richness and Pollination

Biodiversity richness (n = 1) and crop pollination (n = 1) are neglected topics and information about comparing landraces against modern varieties is missing.

3.2.4. Landrace Promote Regulating Ecosystem Services

Overall, we detect a positive effect of local landraces on regulating ecosystem services. They are a valuable source for resistance genes (like indirect plant defense mechanisms), which may have become lost during crop breeding [44,45,53], and are better adapted to local climate conditions [17]. Landraces are often cultivated in complex landscapes (riparian strips, forest remnants, single big trees, hedgerows, orchards, etc.), which may further improve the local biodiversity and its functional benefits such as regulating ecosystem services.

3.3. Cultural Services

According to the MEA (2005), cultural ecosystem services are the “nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreating, and aesthetic experiences” [19]. Within the reviewed literature, five publications are directly relating to cultural services (four surveys among small-scale farmers, one experiment). All publications state a positive influence of choosing landraces over modern varieties on providing people with cultural ecosystem services. These services include traditional values, cooking characteristics, nutritional values, as well as taste and color of harvested crops or prepared dishes.

(1) Findings from farmer surveys

Farmers and related user groups deciding for or against a landrace in comparison to modern varieties link different functional preferences for landraces related to various cultural services. Li et al. [32] asked 162 farmers in semi-structured interviews the reasons maintaining landraces on their fields. One identified reason was pressure from the social environment (13% of respondents), meaning that the landraces play an important role within their traditional food culture. In a study from the Iberian Peninsula on the general use of landraces, the question “Why do you consider the conservation of landraces important?” [53] provided the following responses: (1) taste and the nutritional value (37.5%), (2) tradition and food security (25%), and (3) ideological reasons (16.7%), although the respondents also stated that extra work in making seedbeds is seen as an disadvantage of cultivating landraces (18.7%). The remaining three studies analyze the impact of choosing maize landraces over modern varieties in South America. In an example from Bolivia by Zimmerer (2014) [47], small-scale farmers state that varieties must be suitable for diverse food items such as maize beer (chicha), toasting, soup thickener, and further maize-based foods and drinks. Zimmerer (2014) [47] concludes that each landrace maintains certain cooking characteristics and that the high diversity of landrace varieties in the region is a major part of the overall agrobiodiversity. This example in Bolivia shows that a high degree of landrace diversity not only supports the production of local food types but also reduces the risk of crop failure through variety diversification.

(2) Findings from field experiments

In a study from El Salvador, Olson et al. (2012) [17] investigated different seed types in milpa pots to understand the value of “agroecological and livelihood variables.” Farmers stated that farmers’ seed markets (were landraces are traded), are more reliable concerning information about the varieties than the commercial seed market, allowing best fitting choices (see Figure 2). Additionally, seeds from the farmers’ seed markets were lower in cost and can be re-produced. These findings are in line with the results from Mexíco by Moreno et al. [38], who found the main reasons for persisting local maize landraces in small-scale farming systems is their popularity and high value of cooking characteristics, nutritional values, taste, and color. Other farmers also stated that—although landraces are harder to process compared to modern varieties—they are much tastier. The recipes for their families’ special maize dishes are even passed over the generations together with the according landrace varieties [48].

[FIGURE 2 OMITTED]

Landrace Provide Cultural Ecosystem Services

Small-scale farmers in many developing countries still prefer local landrace varieties because they fill social and cultural niches that modern varieties are lacking [20,47,63,64]. Cooking characteristics are a classical example for these cultural services [47,53]. In our review we found primary scientific evidence from South America concerning maize landraces. But the role of traditional farming practices including traditional varieties like landraces as providers for cultural services is becoming increasingly recognized globally. In conclusion, the use of landraces is a potential way to achieve social-ecological resilience, i.e., the capacity of human-environment systems to absorb shocks induced by changes, so that the system continues to support human well-being [65,66]. Adapted varieties in turn play a key role for socio-ecosystematic processes within small-scale farming systems [67]. In conclusion in-depth knowledge of the cultivation and cooking characteristics of landraces can therefore be seen as fundamental for biocultural diversity as it interlinks biodiversity knowledge with the diversity of cultures and human societies [68].

4. General Conclusions

The results of this review show that small-scale farmers evaluate a multitude of crop features before deciding for or against a given variety. From crop yield to resilience toward environmental changes to taste or storage characteristics and finally family traditions, landraces represent a portfolio of desired plant performances. With this review, we illustrate that local landraces are in many cases better adapted to local farming conditions, do not need as much agrochemical resource input compared to modern varieties, and maintain a diversity of regionally and/or personally specified performances. In some cases, modern varieties become replaced again by landraces due to their higher resistance to pests, diseases, and abiotic stresses, which may help to meet the needs of sustainable agriculture systems facing global climate change. As a part of traditional agricultural systems landraces continue to evolve and adapt to changing social, ecological, and environmental systems. Embedding variety decision in the ecosystem service framework of the Millennium Ecosystem Assessment illustrates that landraces can provide farmers and related user groups with high provisioning services under changing climate conditions because of their resilience under sub-optimal farming conditions. In comparison to modern varieties, landraces are often a trusted source for small-scale farmers globally, achieving stable crop yield with longer storability of the harvest. With specialized resistance genes and other features such as indirect plant defense mechanisms these varieties also provide farmers with regulating services that may be lacking in many cases of modern plant breeding. With regard to food security, landraces are in many cases better adapted to local, environmentally diverse farming conditions and require less artificial resource input compared to modern varieties. With that, they are a valuable component of agrobiodiversity that decreases the vulnerability of agroecosystems to global change. Our results underline the significance of landraces for provisioning and regulating ecosystem services, which needs to be better acknowledged by regional and global authorities.

In addition, small-scale farmers often prefer local landraces to modern varieties due to typical cultural features like family traditions and cooking characteristics for special dishes. In many cases, farmers recognize the role of landraces for the fulfillment of personal non-agronomic features. The diversity of landraces is therefore a viable part of various ways of living and farming, sustaining vivid cultures. Our review shows that genetic diversity and freedom to choose from a large variety pool is a substantial part of cultural ecosystem services and sovereign food production. Unfortunately, cultural ecosystem services are often neglected, but need to be much better acknowledged as a vital part of satisfying living standards.

Last not least, the current legal framework regulating seed usage and variety protection needs to be taken into account. Since seeds and varieties are the foundation for food production, their free access—including the right to save and replant seeds, the right to share seeds and the right to use seeds to breed new varieties—is often considered as a mandatory part for sovereign agriculture and nutrition [69]. Landraces are often maintained and developed in informal, commons-based seed systems, such as participatory breeding arrangements [70,71] and seed exchange systems [72,73]. Such systems need to be acknowledged by national and international authorities to provide small-scale farmers with a stable and independent livelihood—an essential part toward food sovereignty.

#### Worst case, the drop is small

David R. Montgomery 17, MacArthur Fellow, Ph.D. in Geomorphology from UC Berkeley, Professor of Earth and Space Sciences at the University of Washington, “Busting the Myths of Sustainable Farming”, Uplift, 5-24, https://upliftconnect.com/myths-of-sustainable-farming/

Myth 3: Conventional Farming is Necessary to Feed The World

We’ve all heard proponents of conventional agriculture claim that organic farming is a recipe for global starvation because it produces lower yields. The most extensive yield comparison to date, a 2015 meta-analysis of 115 studies, found that organic production averaged almost 20 percent less than conventionally grown crops; a finding similar to those of prior studies. But the study went a step further, comparing crop yields on conventional farms to those on organic farms, where cover crops were planted and crops were rotated to build soil health. These techniques shrank the yield gap to below 10 percent.

The authors concluded that the actual gap may be much smaller, as they found “evidence of bias in the meta-dataset toward studies reporting higher conventional yields.” In other words, the basis for claims that organic agriculture can’t feed the world depends as much on specific farming methods as on the type of farm.

Sustainability depends on the specific farming methodsThe sustainability depends as much on specific farming methods as on the type of farm.

Consider too that about a quarter of all food produced worldwide is never eaten. Each year the United States alone throws out 133 billion pounds of food, more than enough to feed the nearly 50 million Americans who regularly face hunger. So even taken at face value, the oft-cited yield gap between conventional and organic farming is smaller than the amount of food we routinely throw away.

### Big Ag Good DA---AT: Yield Link---Ext

#### Sustainable ag increases yields

Katlyn S. Morris 16, PhD Candidate in the Department of Plant & Soil Science at the University of Vermont, and Gabriela Bucini, PhD student at the Natural. Resource Ecology Laboratory (NREL) of Colorado State University, “California’s Drought as Opportunity: Redesigning U.S. Agriculture for a Changing Climate”, Elementa Science, https://www.elementascience.org/articles/10.12952/journal.elementa.000142/

Yields and productivity

In addition, contrary to the long-held assumption that organic or agroecological farms are less productive than large-scale conventional farms, diverse agroecosystems can produce higher yields per unit of land than monocultures. Research has shown that organic agriculture produces yields sufficient to ‘feed the world’ at present and for a growing population, without the need for agricultural expansion (Badgley et al., 2007). Various trials and meta-analyses have concluded that yields are comparable for organic and conventional fields (Ponisio et al., 2015, Pimentel et al., 2005), while others have shown a great deal of variability in yields depending on the crop, climatic and geographic conditions, and specific management practices (DePonti et al., 2012; Seufert et al., 2012). Productivity in terms of harvestable products per unit area is higher in polycultures than monocultures with the same level of management (Altieri, 1999). Yield advantages can range from 20–60% depending on crops, climate, and management factors. These yield advantages are attributable to more efficient use of water, light, and nutrients in polycultures and the maximization of vertical space of different crops (Altieri and Toledo, 2011).

Many of the principles of agroecology and other sustainable agriculture approaches can be applied to different geographies and crop or livestock systems to improve yields without reliance on agrochemicals and irrigation. For example, in Mexico one hectare planted with a mixture of maize, squash and beans can produce as much as 1.73 ha of a maize monoculture. In Brazil, intercropped maize and beans exhibited a yield advantage of 28 percent over maize monocultures. In the Brazilian Amazon, Kayapo yields are 200% higher in agroecological systems than they are in systems that use agrochemicals (Altieri and Toledo, 2011). In the United States, the Rodale Institute long-term trial of corn and soybeans managed conventionally versus organically showed that organic crops (fertilized with manure and intercropped with legumes) had significantly higher yields than conventional in 4 out of 5 of the drought years between 1988 and 1999 (Lotter et al., 2003). Manure and legume treatments improved soil water-holding capacity, water infiltration rate, and water capture efficiency, leading to higher yields in periods of water-stress (Lotter et al., 2003). A long-term, large scale trial in Iowa demonstrated that cropping system diversification of maize and soybean resulted in lower costs from reduced chemical inputs and higher yields over time (Davis et al., 2012). These examples from throughout Latin America and the United States challenge the assumption that diversified and organically managed farms are less productive than conventionally managed farms.

#### Best studies show it increases yields and avoids an array of ecological degradation---extinction

Marcia S. DeLonge 16, Scientist in the Food and Environment Program at the Union of Concerned Scientists and PhD in Environmental Science from the University of Virginia, Albie Miles, Assistant Professor of Sustainable Community Food Systems at the University of Hawai'i, Ph.D. in Environmental Science, Policy and Management from UC Berkeley, and Liz Carlisle, Lecturer in the School of Earth, Energy, and Environmental Sciences at Stanford University and Ph.D. in Geography from UC Berkeley, “Investing in the Transition to Sustainable Agriculture”, Environmental Science & Policy, Volume 55, Part 1, January, p. 266-267

1. Introduction

While industrial agriculture has proven highly productive, it has simultaneously generated environmental and social impacts of global concern (Kremen and Miles, 2012). Agriculture affects everything from greenhouse gas emissions to biological diversity, water quality, soil erosion, pollination services, carbon sequestration, human health, livelihoods and food security (Zhang et al., 2007; Perfecto and Vandermeer, 2010; Tilman et al., 2011; Hayes et al., 2011; Tscharntke et al., 2012). At present, industrial agricultural practices are contributing to the degradation of key ecological processes that underpin life on Earth, driving climate change, loss of biosphere integrity, destructive land system changes, and the eutrophication of oceans from phosphorus and nitrogen fertilizers (Liebman & Schulte, 2015; Steffen et al., 2015; Tilman et al., 2001; West et al., 2014).

Agroecological farming systems, including biologically diversified systems, have been found to be capable of meeting global food needs sustainably and efficiently (Gliessman, 2014). Recent quantitative syntheses and meta-analyses demonstrate that these systems can outperform chemically managed monocultures across a wide range of globally important ecosystem services while producing sufficient yields and reducing environmental externalities (Kremen and Miles, 2012; Lundgren and Fausti, 2015). Indeed, in some instances, agroecological farming systems can produce equivalent or higher yields than conventional and monoculture agriculture while enhancing ecosystem services and profitability (Davis et al., 2012; Kremen and Miles, 2012; Seufert et al., 2012; Skinner et al., 2014; Ponisio et al., 2015; Prieto et al., 2015).

Despite its promise, research and development related to agroecology has been thought to command less than two percent of public agricultural research funding in the United States and less than one percent globally (Carlisle and Miles, 2013; Niggli et al., 2014; Lipson, 1997). Thus, farms and ranches based on agroecology – the application of ecological principles to the design and management of agricultural ecosystems – have achieved high levels of environmental performance and productivity, even with minimal funding, offering an impressive return on public investment. Therefore, when combined with significant policy and organizational support, more robust agroecological research programs appear to offer the most pragmatic approach for successfully fulfilling the human right to food while restoring environmental quality in the face of global climate change and rapid environmental degradation (Dalgaard et al., 2003; Altieri and Nicholls, 2008; Reganold et al., 2011; Fernandez et al., 2013; Gliessman, 2000; MEA, 2005; De Schutter, 2014; IPCC, 2014; Bommarco et al., 2013).

#### Yield increases from seed engineering are fake news

Thomas A. Reuter 17, Anthropologist, University of Melbourne, Asia Institute, “Seeds of Life, Seeds of Hunger,” Anthropology of Food, 05/16/2017, journals.openedition.org, https://journals.openedition.org/aof/8135#tocfrom1n5

The term ‘High Yielding Varieties’ is somewhat of a misnomer because it implies that the new seeds are high yielding in and of themselves, which is not always the case. A distinguishing feature of many hybrid seed varieties is, in fact, that they are more responsive than traditional seeds to certain key inputs such as nitrate fertilizers and irrigation, or more resistant to chemical insecticides or herbicides. Palmer and others therefore suggest the term ‘high-responsive varieties’ be used instead (cited in Shiva 1991:72).4 Even introduced seeds that produce high yields at consistent input levels may not outperform local varieties in the long run, as soil nutrients are depleted, or they may have other vulnerabilities that are not immediately apparent. When the new seeds are promoted as ‘improved,’ ‘advanced,’ ‘enhanced’ or ‘modern,’ and marketed with prosaic names such as ‘seeds of hope’ or ‘seeds of life’, such important caveats are rarely mentioned.5

### Big Ag Good DA---Epistemology

#### Their evidence is industry propaganda that you should disregard

John E. Ikerd 17, 5/31/2017. Professor Emeritus of Agricultural & Applied Economics University of Missouri Columbia. College of Agriculture, Food and Natural Resources. “Our Chemical-Dependent, Profit-Driven, Industrial Ag Complex is Not Going Quietly,” In These Times, http://inthesetimes.com/rural-america/entry/20177/farm-policy-corporate-power-industrial-agriculture-sustainablity-nixon.

In an attempt to stem the tide of growing public concern, the industrial agricultural establishment has mounted a nationwide propaganda campaign designed to, in their words, “increase confidence and trust in today’s agriculture.” The board members of one front group, the U.S. Farmers and Ranchers Alliance, include the American Farm Bureau Federation, John Deere as well as major agricultural commodity organizations. Board members Monsanto and DuPont have each pledged $500,000 per year to the campaign.

A recent study by Friends of the Earth, an international network of environmental organizations, documents similar “front groups” that have been spending more than $25 million per year to polish the tarnished public image of industrial agriculture. This doesn’t include the campaigns of individual industrial agricultural apologists that are carried out through public schools, 4-H and Future Farmers of America, local civic clubs, and state and local mass media. That said, the agricultural establishment seems to consider their PR campaign as little more than a “holding action” against growing public concerns. They are using their political power to establish legislative protections that would prevent effective regulation.

All 50 states already have some form of right-to-farm law, but they must be strengthend. The early laws, beginning in the 1980s, were enacted to minimize the threat to nuisance litigation and prohibitive state and local government regulation of “normal farming practices.” Current political initiatives, however, allow the agricultural establishment to define “industrial farming practices” as a legally protected economic right. Industrial agriculture's advocates know it's vulnerable to growing public concerns and they're doing everything in their power to protect it.

The agricultural establishment has essentially abandoned their earlier strategy for demanding that regulation of industrial agriculture be based on “sound science.” They seem to understand that the scientific evidence supporting the growing public concerns is now clear, compelling, even overwhelming. I personally think it has become misleading to cite a few specific studies when there is so much scientific information documenting the environmental, social, economic, and public health problems associated with industrial agriculture. I have started relying on meta-studies, where scientists or teams of scientists review dozens or hundreds of credible studies and draw logical, generalizable conclusions.

### Big Ag Good DA---Resilient Seeds Good

#### Climate resistant seeds prevent extinction

Peter N. Nemetz 22, Professor, Strategy and Business Economics Division, Sauder School of Business, UBC, “6 Agriculture and the existential threat of climate change,” Unsustainable World: Are We Losing the Battle to Save Our Planet?, 1st ed., Routledge, 02/08/2022, pp. 215–238, DOI.org (Crossref), doi:10.4324/9781003199540

In Chapter 5, Figure 5.1 portrayed the hierarchical development of society after the Neolithic Revolution. The pyramidal shape with the large base representing employ- ment in the agricultural sector remains a common phenomenon in many countries in the developing world. In contrast, Figure 6.1 is an inverted pyramid typical of a modern, Western- style economy where the percentage of total employment devoted to agricul- tural production is very low (see figures 6.2 and 6.3). In addition to providing a literal representation of the modern economy, Figure 6.1 has a profound figurative interpret- ation: every economy, regardless of its stage of development, is ultimately dependent on agricultural production to maintain the complex infrastructure that characterizes its society. Viewed in this way, the vulnerability of all societies to the vicissitudes of food production becomes apparent. There is an inherent fragility here which only becomes apparent in times of stress— whether ecological, political, economic, or social.

Until fairly recently little serious attention had been given to the vulnerability of our food supplies to climate change. Even if such vulnerability was acknowledged, a common refrain was that the sector could adapt. It is the hypothesis of this book that such faith is misplaced and that food supply is the Achilles’ heel of adaptation. This section is divided into two parts: the first discusses the role of increased atmospheric carbon dioxide on plant growth, and the second addresses the medium- to long- term threats to global agri- culture from all the manifestations of climate change.

Carbon dioxide and plant growth

In the face of political inertia and the lagged effects of global warming, one of the few bright sides was the apparent positive impact of increased levels of atmospheric carbon dioxide on the growth of plants, including food crops (Kimball 1983; Cure and Acock 1986; Lu et al. 2016; Uddling et al. 2018). The suggestion was that continued global warming might not have posed as great a threat to food supplies as feared. Unfortunately, this misimpression was generated by a simple extrapolation. As discussed in Chapter 2, too often such extrapolations are made when in fact the relationship is curvilinear. Such appears to be the case with respect to the CO2– plant nexus. Recent more nuanced research has demonstrated that as CO2 levels continue to rise past their early positive impacts on plant growth, the opposite effect can materialize and plant growth is significantly lower than expected (Ainsworth and Long 2005) or is retarded due to a combination of factors (Tai et al. 2014; Reich et al. 2018; Chandler and LePage 2007; NASA 2016; Diaz et al. 1993; Yuan et al. 2019; Ortiz- Bobea at al. 2021). The entire growth- response phenomenon may

[FIGURE 6.1 OMITTED]

[FIGURE 6.2 OMITTED]

in extremis be a curvilinear function that is concave to the x- axis (see Figure 6.2). As such, the projected continued increase in atmospheric carbon dioxide does not bode well for our food supply.

Increasing levels of carbon dioxide have an additional impact on plants, particularly leaf thickness. Kovenock and Swann (2018) have found that higher CO2 levels cause plants to thicken their leaves—b y as much as one-t hird in mass per area—r educing their efficiency in sequestering atmospheric carbon. They estimate that this can result in a decline in global net primary productivity of 5.8 petagrams of carbon per year (PgC/ year), representing a decreased CO2 sink of similar magnitude to current fossil fuel emissions of 8 PgC/ year.

The next section explores in more detail what further impacts continued climate change can be expected to have on the agricultural sector generally and food crops in particular.

[FIGURE 6.3 OMITTED]

Climate change and agriculture

Climate change can affect agriculture in several significant ways, alone or in combination: through drought, heat, the direct effect of greenhouse gases (GHGs) on plant nutritional content, and water and storms. Recent research has established a direct link between anthropogenic activity manifested in climate change and extremes in precipitation, resulting in floods or drought (Madakumbura et al. 2021). Figure 6.3 displays the first, second, and third order effects of these factors and a more detailed discussion of each follows.

Drought

Few, if any, natural phenomena have posed a greater threat to the survival of civilizations than drought. Table 6.1 lists some major past civilizations from the second millennium BCE onwards, each of which has fallen in part due to drought (Cullen et al. 2000; Diamond 2005; Sheffield and Wood 2011; Evans et al. 2018; Yancheva et al. 2007; Ortloff and Kolata 1993; Sinha et al. 2019; Hodell et al. 1995 and 2001). But drought is not confined to distant history. Within the last century, the world has experienced, and con- tinues to experience, crippling national and regional droughts. Included among these are:

• 1930s US Dust Bowl (McLeman et al. 2013)

• 1959– 61 China (Ó Gráda 2009)

[TABLE 6.1 OMITTED]

• 1972 Russia (UNICEF 2010)

• 1972– 73 India and Ethiopia (Ó Gráda 2009)

• 1980– 81 Uganda (Ó Gráda 2009)

• 1984– 85 Sudan (Ó Gráda 2009)

• 1991– 92 Somalia (Ó Gráda 2009)

• 1998 Sudan (Ó Gráda 2009)

• 2001– 9 Southeast Australia (Dijk et al. 2013)

• 2002 Malawi (Devereux 2002)

• 2003 Europe (Ciais et al. 2005)

• 2005 South Darfur (UNICEF 2005)

• 2005 Niger (Ó Gráda 2009)

• 2010 Amazon (Lewis et al. 2011)

• 2010 Russia, Ukraine, and Kazakhstan (USDA 2011)

• 2011– 12 East Africa (Taylor 2011)

• 2012 US Southern Tier (Rippey 2015)

• 2017 Northern and Northeast China (Wang et al. 2018)

• 2017 US northern Great Plains (Hoell et al. 2018)

• 2017 East Africa (Funk et al. 2018)

• 2018 Southern Guatemala (New York Times June 29, 2018)

• 2018 Cape Town and southern South Africa (USA Today January 22, 2018)

• 2019 Australia (Guardian May 15, 2019)

• 2019 Somalia (Guardian June 6, 2019)

• 2019 India (Guardian June 12, 2019)

• 2021 Madagascar (UN OCHA 2021)

• 2021 California and the American West (Guardian May 10, 2021; New York Times July 20, 2021)

• 2021 Canadian Prairies (CBC News May 15, 2021)

• 2021 Taiwan (New York Times May 27, 2021)

Recent research has raised the specter of continuing or worsening drought events in North and South America, Europe, Asia, the Middle East, and Africa with significant effects on future crop yields (Romm 2011; Büntgen et al. 2021; Dosio 2017; Glotter and Elliott 2016; Liang et al. 2018; Earth Institute 2018; Su et al. 2018; WMO 2019; Williams et al. 2020; Cowan et al. 2020; Science April 17, 2020; Alizadeh et al. 2020; Cook et al. 2020; Haile et al. 2020; New York Times July 8, 2020; Markonis et al. 2021; HuffPost April 17 and April 21, 2021; New York Times June 21, 28, and 29, 2021; CNN June 23 and August 22, 2021).

The consequences of drought are multifaceted and include, within any one country or region, partial or complete loss of crops as the most immediate result, followed by food shortages, price increases, and possibly famine. These can be accompanied by a further diverse range of disastrous results including the breakdown of government and civil society, civil strife, terrorism, civil war, increased insect predation, disease, mass migration, desertification, and the potential emergence of failed states (see, for example, Brown 2009; Ó Gráda 2009; Cribb 2010; Soysa and Gleditsch 1999; Dyer 2011; Mohtadi 2012; Ebi and Bowen 2016; World Bank 2016; UK Ministry of Defence 2018; Park et al. 2018; Parenti 2011; Feng et al. 2019; Winsemius et al. n.d.; White House 2021). Many of these consequences are not confined to the region under stress. Out-migration, the spread of disease, civil war, and the transformation of formerly stable national governments to criminal enterprises all can have profound effects on neighboring states and the global community (Desai et al. 2021).

One study (Lesk et al. 2016) estimated that drought and extreme heat reduced global cereal production by 9– 10 percent over the period 1964 to 2007. While drought is fre- quently the result of excessive heat, heat waves of short to medium length may not neces- sarily lead to drought conditions and, as such, heat is addressed as a separate category. Ultimately, aridity can have profound impacts on ecosystems including “abrupt decays in plant productivity, soil fertility and plant cover and richness” (Berdugo et al. 2020, p. 787). Berdugo et al. predict that “more than 20% of the terrestrial surface will cross one or several of these [global] thresholds by 2100”. Potential global tipping points threaten the continued growth and stability of global food production. By way of example, a recent study by Ritchie et al. (2021) using data from Great Britain concluded that economic and land- use impacts of crossing a tipping point with the potential collapse of the Atlantic Meridional Overturning Circulation, the conveyor current, are “likely to include wide- spread cessation of arable farming” (p. 76).

What has saved many countries from disaster from the loss of food supplies has been the international safety net whereby global grain exporters provide food relief directly or through international agencies. Two factors may threaten this safety net in the future as the world experiences increasing temperatures and accompanying drought (NASA 2015). First, is the potential loss of domestic grain surpluses among the world’s major grain exporters. For example, in 2019, Australia, the third largest exporter of wheat in 2017 after Russia and the United States (IndexBox 2019), was forced to import due to drought across its eastern states (Guardian May 15, 2019). In fact it has been reported that increases in Australian wheat yields have stalled since 1990 due to climate change (Hochman et al. 2017). The outlook is not particularly encouraging, as the country’s national science agency (CSIRO 2018) has predicted that warming trends will continue into the future with increases in the frequency and/ or intensity of heat events, fire weather, and drought. Equally disturbing was the effect of the drought of 2001– 10 on rice production in Australia. Output dropped from a high of 1,643 kilotons (kt) in 2000–0 1 to 17.6 kt in 2007–0 8 (Dijk et al. 2013; Australia Department of Agriculture, accessed 2019; Trnka et al. 2019).

Second, the possibility exists that future warming with accompanying drought will increase the probability of synchronized losses to certain global crops such as maize, wheat, and soybeans (Lunt et al. 2016; Anderson et al. 2019; Tigchelaar et al. 2018; Mehrabi and Ramankutty 2019). To quote Tigchelaar et al. (p. 6644):

For the top four maize- exporting countries, which account for 87% of global maize exports, the probability that they have simultaneous production losses greater than 10% in any given year is presently virtually zero, but it increases to 7% under 2°C warming and 86% under 4°C warming. Our results portend rising instability in global grain trade and international grain prices, affecting especially the ∼∼800 million people living in extreme poverty who are most vulnerable to food price spikes.

When global commodity markets are tight, any slight change in supply can have an outsized impact on price. This applies to food crops in particular. The 1972 partial failure of the wheat crop from Russia, which produces 21 percent of the global total, caused grain prices to hit 125- year highs, while soybeans increased in price from $3.30 to $12.90 per bushel, and food prices around the world rose 50 percent in 1973 (Businessinsider.com 2010). A similar phenomenon was observed after the 2012 drought in the United States and is predicted to only worsen in the next few decades (Oxfam 2012). Figure 6.4 displays wheat prices from 1961 to 2019. As with many commodities, prices tend to be volatile and are influenced by a mixture of ecological, political, economic, and social factors. At least five price peaks are apparent in this time series: 1974, 1980, 1996, 2008, and 2012. Peaks in 1974 and 2012 were driven by drought in Russia and the United States respect- ively. The increased prices of 1996 were attributed to crop losses from cold weather in the United States (US BLS 1998), and 2008 was due to a multitude of causes, including poor

[FIGURE 6.4 OMITTED]

wheat harvests in Australia and the Ukraine (Wiggins et al. 2010). Whenever these price spikes occur, undue financial pressure is placed upon those developing countries relying heavily on the importation of grains, and wheat in particular. By way of example, in 1996 wheat was Egypt’s most valuable import valued at $1.2 billion. Wheat has remained a crucial import, valued at $1.9 billion in 2008 and $4.7 billion in 2020, second only to refined petroleum products (UN, various years). Egypt and several of its Middle Eastern neighbors are extremely sensitive to food prices and have experienced potentially destabil- izing food riots over the past few decades (New York Times March 3, 1992, and February 25, 2008).

Confidence that watersheds can completely recover after drought, thereby reestablishing an important source of water for crops, may be misplaced. Peterson et al. (2021, p. 745) report on Australia’s experience in a post- drought period and observe that “watersheds can have a finite resilience to disturbances … [H]y drological droughts can persist indef- initely after meteorological droughts.” These findings could have implications for food supply far beyond Australia as the authors cite other research which found that prolonged droughts have caused unexpectantly large reductions in stream flows in the United States and China (Tian et al. 2018; Avanzi et al. 2020).

A significant proportion of the potential increased mass migration, a source of anxiety for the West, can ultimately be tied to conflict and climate change manifesting in the form of drought, heat, and flooding (Hsiang et al. 2011; CARE et al. 2009). To many countries, such events entail potentially serious risks to national order and security. The UNHCR (2018) has reported that more than seventy million people were forcibly displaced in 2018, primarily due to a variety of political and economic causes. Munich Re (Laczko 2008; and see also CRO Forum 2016) has identified mass migration as an emerging issue in the next few years with risks and potential benefits for countries with aging populations and in need of new labor. (See also World Bank 2014a). But, clearly, the impact of conflict and mass migration linked to climate change transcends mere economics. Several recent art- icles have attributed upheavals such as the Arab Spring (Perez 2013) and its consequences in Darfur (Biello 2009), Egypt (Biello 2011), and Syria (Fischetti 2015), as well as upheavals in Mexico (Center for Global Development 2012; Climate Reality Project 2018) to global climate change within the boundaries of a country or its neighbors. Several other studies have examined the relationship between climate change and human conflict but have found conflicting evidence (Hsiang et al. 2013; Hsiang and Burke 2014; Forsyth and Schomerus 2013; Missirian and Schlenker 2017).

It should also be noted that compound drought and heat events may have the poten- tial to sufficiently reduce the carbon sequestering ability of soils that they become net carbon sources, creating yet another positive feedback loop in the global warming cycle (Zhou et al. 2019). Alizadeh et al. (2020) have identified an “alarming” increase in the number of these compound events with the number of geographic areas experiencing these occurrences also increasing.

Several scientific reports have projected an increasing frequency and severity of drought over the rest of this century (Rind et al. 1990; Burke et al. 2006; Seager et al. 2007; Solomon et al. 2009; Dai 2011; Romm 2011; Cook et al. 2014; Underwood 2015; Park et al. 2018; Zhou et al. 2019). This and other similar projections have moved cli- mate change considerations into discussions on national security. The US Department of Defense (Schwartz and Randall 2003; US DoD 2014a and b, 2015, and 2021) and other American agencies (NIC 2021; US DHS 2021) have now clearly tied the threat of future climate change, including events such as drought, to American security interests (see also Holland 2016). The importance of drought across economic, social, and eco- logical dimensions has prompted the development of continuously updated monitoring databases at both the international (Standardized Precipitation- Evapotranspiration Index [SPEI] Global Drought Monitor at spei.csic.es) and US levels (US Drought Monitor at droughtmonitor.unl.edu).

Heat

While excessive heat has many of the same consequences of its frequent sequela, drought, it also has several distinct effects of its own. In particular, in extremis, it can make a region totally uninhabitable for humans, thus compounding the difficulty of any residual efforts to produce crops. For example, one scientific study (Pal and Eltahir 2015) forecast that given the current trajectory of global warming, the Persian Gulf region will be unable to support human habitation within this century due to predicted wet- bulb temperatures (i.e. combining dry- bulb temperatures, or conventional thermometer readings, with humidity) in excess of 35 degrees Celsius (°C). At this temperature, the human body is incapable of maintaining a homeostatic temperature balance and faces death in a short period of time (Sherwood and Huber 2010; Raymond et al. 2020). Vicedo- Cabrera et al. (2021) have found that more than one- third of heat- related deaths in forty- three countries surveyed can be attributed to anthropogenic climate change. Recent dry-b ulb temperatures in the Gulf region have already surpassed historical records; during the summer of 2017 in the Iranian city of Ahvaz readings reached 54°C or 129.2 degrees Fahrenheit (°F) (Independent June 30, 2017). Concerns have also been voiced over the future habitability of Pakistan’s Indus Valley, considered one of the areas of the world most vulnerable to climate change. In June 2021, the city of Jacobabad reached a temperature of 52°C (126°F). To quote the report in the Telegraph (June 28, 2021):

This city of some 200,000 in Pakistan’s Sindh province has long been renowned for its fierce heat, but recent research has conferred an unwelcome scientific distinction. Its mixture of heat and humidity has made it one of only two places on earth to have now officially passed, albeit briefly, a threshold hotter than the human body can withstand.

A similar dire situation faces major agricultural and densely populated regions in South Asia and China, specifically around the Ganges and Indus river basins (Im et al. 2017) and the North China Plain (Kang and Eltahir 2018; see also Chen et al. 2018; Zhou et al. 2018). Diffenbaugh (2020, abstract) has suggested that “21st century global warming has substantially increased the probability of unprecedented hot and wet events” (see also Li et al. 2020.) Xu et al. (2020, p. 11350) have forecast that “over the coming 50 [years], 1 to 3 billion people are projected to be left outside the climate conditions that have served humanity well over the past 6,000 [years].”

The issue is not only high average temperatures; it is the occurrence of heat waves of short duration or sustained periods which can have devastating impacts on crops and human health. In statistical terms, this is the distinction between mean and variance but, in this case, the increased variance of temperature under global warming is asymmetrical, with a much greater probability of extreme heat rather than cold (Bathiany et al. 2018; New York Times July 28, 2017; Coumou and Robinson 2013; Fisher and Knutti 2015). A recent risk study of global urban centers (Verisk Maplecroft 2021) concludes that of 576 cities studied, Asian urban areas represent 99 of the 100 most vulnerable to extreme heat stress as well as pollution, dwindling water supplies, and other natural hazards associated with climate change (see also Rogers et al. 2021 and Science October 4, 2021).

Such events are not restricted to the developing world, however. Within the past few years, and particularly during the summer of 2017, southern Europe sustained an elevated rate of mortality due to excessive heat (Kew et al. 2018) and California declared a state of emergency during a heat wave in mid- 2021 (BBC June 18, 2021). The world is now seeing twice as many days over 50°C as in the 1980s (BBC September 13, 2021). In August 2021, Sicily experienced the highest ever temperature in Europe at 48.8°C, surpassing the record of 48°C in Athens in 1977 (Guardian August 11, 2021). A recent in- depth study has attempted to quantify the number of excess deaths due to heat waves in twenty developed and developing countries under various climate change scenarios (Guo et al. 2018). The findings tend to support other recent observations that global warming has a disproportionality greater effect on the poorer regions of the world (New York Times March 12, 2018).

Some historical data have already provided evidence of the negative effect of extreme heat on crop yields (World Bank 2014b). Lesk et al. (2016) examined data on weather and crop yields over the period 1964–2 007 and found that droughts and extreme heat significantly reduced global cereal production by 9–1 0 percent. Another study covering the period 1980–2 008 (Lobell 2011) concluded that weather events contributed to a global maize and wheat production decline of 3.8 percent and 5.5 percent respectively. Battisti and Naylor (2009) reviewed the effects of severe heat in Europe during the summer of 2003 and reported that Italian maize yields dropped 36 percent, while France experienced significant decreases in several commodities: maize and fodder (down 30 percent), fruit (down 25 percent), and wheat (down 21 percent). These observations of past events have been complemented by the development of several models that attempt to predict future crop declines in the face of rising global temperatures. Liu et al. (2016) predict that a 1°C increase in global temperature will lead to declines in wheat yields of between 4.1 percent and 6.4 percent. Zhao et al. (2017) broaden their focus to cover the four major crops, including wheat, which provide two- thirds of human caloric intake. Their results predict reductions in yields for each degree Celsius increase in global mean temperatures as follows: wheat, down 6 percent; rice, down 3.2 percent, maize, down 7.4 percent; and soybeans, down 3.1 percent. Additional evidence on the negative effect of heat on crop yields has been provided by Schauberger et al. (2017) and Tack et al. (2017).

More detailed research has examined crop yields on the basis of night and day temperatures and assumptions of linearity in temperature– yield functions. Mohammed and Tarpley (2009, p. 999) observe that:

although the global increase in nighttime temperature is at a faster rate than daytime temperature and it is well-k nown that high temperatures are a major constraint to crop productivity especially when temperature extremes coincide with critical stages of plant development, most of the studies on crop growth and grain yield are based on daily mean air temperature, which assumes no difference in the influence of day versus night temperatures.

They cite the work of Peng et al. (2004) who found that a decline in rice yields could be attributed to increased nighttime temperature associated with global warming.

Of particular note is evidence to support the theory that ecological processes are fre- quently not linear. Lobell et al. (2011) used historical data on African maize yields to demonstrate that the effect of heat on these yields was nonlinear. These results are even more pronounced under drought conditions than under optimal rain- fed management. Schlenker and Roberts (2009) conducted a similar analysis of US corn, soybean, and cotton yields and found that the resulting curvilinear function is concave to the x-a xis whereby yields increase up to a full day 29–3 2°C and then decline steeply above these levels. Their conclusions, derived from scenario- based modeling, are not encouraging as they conclude that “area-w eighted average yields are predicted to decrease by 30–4 6% before the end of the century under the slowest warming scenario and decrease by 63– 82% under the most rapid warming scenario.”

Unfortunately, the significant negative direct effects of rising temperatures on crop yields are accompanied by at least one major indirect effect: insect predation. Deutsch et al. (2018) use a spatially explicit insect population metabolism model to estimate losses to rice, maize, and wheat. Insect consumption of crops is driven by metabolic rates and population size, both of which are functions of temperature. Projected global yield losses are estimated to increase by 10 to 25 percent per degree Celsius of global mean surface warming, with the highest losses expected in the grain- producing regions of the nor- thern hemisphere. Riegler (2018) concludes that this pessimistic assessment may be an underestimate as many insect pests are vectors of plant pathogens, which could further increase crop losses due to global warming. Other research on past and recent infestations of locusts also suggests causal links with short-t erm changes in weather patterns such as levels of precipitation (Guardian June 8, 2020; East African January 31, 2020; Tian et al. 2011; see also FAO 2019, chapter 2.4).

None of these findings is particularly encouraging in light of expected global popula- tion growth and increased incomes with their concomitant changes in taste towards more ecologically damaging foods. Principal among these is meat, the production of which relies heavily on grain as an input. Optimistic assessments that heat-stressed grain production could simply move further north towards a more benign environment are problematic for several reasons: first, the regions no longer hospitable for crop production will face increased economic hardships; second, as global temperatures continue to rise, geographic limits to further northern progression will be reached; and finally, not all soils at more northerly latitudes may be capable of supporting large-scale intensive crop production. As Overpeck and Conde observe (2019, p. 807), “absent climate change mitigation, adapta- tion strategies will in many cases become overwhelmed, leading to unacceptable costs to both human and natural systems.”

A potentially portentous milestone was reached in late June and early July 2021 with the heat wave that afflicted the Pacific Northwest of North America, particularly Washington State, Oregon, Montana, and British Columbia. There were four distinguishing characteristics of the heat dome: first, daily heat records were exceeded not by small increments, but by large increases in the order of 9°F (BBC July 7, 2021), a surprising result considered virtually impossible without climate change (WWA 2021b). Portland Oregon reached 115°F and the town of Lytton in British Columbia set a new Canadian record of 121°F (New York Times June 29, 2021; CBC News June 30, 2021). Unfortunately, the town was subsequently completely destroyed by a forest fire. Second, there was sig- nificant damage to crops in both Washington State and British Columbia (CBC News July 6, 2021; New York Times July 3, 2021), with up to 75 percent of some fruit crops too damaged to be harvested. It has also been estimated that the heat dome might have killed as many as one billion small marine animals, such as mussels, snails, sea stars, and clams, on Canada’s west coast, as well as threatening the region’s iconic salmon fisheries (Guardian July 8, 2021a; New York Times July 9, 2021). A parallel threat has materialized in Montana with drought endangering the state’s trout industry (New York Times July 23, 2021). Third, almost one thousand deaths in the human population of the Pacific Northwest have been attributed to the heat dome (CBC News July 2, 2021; Guardian July 8, 2021b). The fourth factor, potentially the most important, is the speculative hypothesis— as yet unproven— that a threshold has been crossed in the relationship between climate change and heat waves “where just a relatively small rise in global temperatures could greatly increase the likelihood of a big jump in [isolated events of] extreme heat” (New York Times July 7, 2021). This de facto tipping point was unanticipated as recently as July 2021 (Guardian July 7, 2021). Unfortunately, the heat event was not confined to the Pacific Northwest in North America, as California, Nevada, and Arizona subsequently experienced a similar problem, which exacerbated wildfires and threatened the operation of electric power grids.

Accompanying the heat wave in western North America have been massive forest fires in Oregon and British Columbia, unprecedented fires in Siberia, devastating flooding in Europe and British Columbia, and record rainfall in China (CNN July 16, 17, and 18, 2021; New York Times July 17, 21, and 22, and November 29, 2021; Guardian July 20, 2021). The distinguishing characteristic of all these events is the unmistakable fingerprint of climate change (CNN July 16, 2021). Unfortunately these types of events are likely to increase in frequency and severity until climate change is stabilized or reversed at some indeterminate time in the future (Guardian July 21, 2021; Kahraman et al. 2021). Clearly, if these types of record- breaking events become the norm they could represent a major threat to human health and global food supplies. Scientific support for this possibility has been provided by Fischer et al. (2021) who conclude: “In high- emission scenarios, week- long heat extremes that break records by three or more standard deviations are two to seven times more probable in 2021– 2050 and three to 21 times more probable in 2051– 2080, compared to the last three decades” (p. 1).

The occurrence of unprecedented extreme heat, drought, and excessive precipitation all pose a major threat to global food supply. While the quantity of food produced is the key to human survival, attention must also be paid to food quality, particularly its nutritional content.

Greenhouse gases and crop nutritional quality

To the prospect of future decreases in food output resulting from drought, heat, predation, and disease must be added the threat to the nutritional value of crops. One of the first studies to systematically survey and report on research findings was published by Loladze in 2002. The author found increasing ambient carbon dioxide led to decreases of up to 20 percent in a broad array of nutrients, including nitrogen, phosphorus, potassium, cal- cium, sulfur, magnesium, iron, zinc, manganese, and copper (see also Weyant et al. 2018). A string of more recent research has expanded on Loladze’s analysis, predicting:

• lower concentrations of zinc and iron in grains and legumes (Myers et al. 2014; Weyant et al. 2018)

• increasing zinc deficiency, particularly in Africa and South Asia (Myers et al. 2015)

• significantly lower iron concentrations in wheat, rice, barley, legumes, and maize (Smith et al. 2017)

• reduced protein content of crops such as rice and wheat (Medek et al. 2017)

• reduction in protein, micronutrients, and vitamin content of rice (Zhu et al. 2018)

• decreased crop nitrogen and protein concentrations (Uddling et al. 2018)

These are worrying trends considering the current widespread extent of malnutrition among many developing nations (WMO 2018; WHO 2019).

Storms and floods

It is ironic that the process of global warming, which exacerbates drought and heat, can also cause increased rainfall and cooler temperatures depending on locale and time of year. A fundamental characteristic of climate change is the increased incidence of weather extremes, rainfall and heat, and the frequency and severity of storms (WWA 2021a). While some governments remain reluctant to acknowledge the existence and full ramifications of climate change, the phenomenon has not escaped the notice of the insurance industry. Major reinsurers such as Munich Re (n.d.) and Swiss Re (2020) have identified strong causal linkages between our warming planet and natural disasters and are predicting that events will worsen. While some experts are reluctant to link any one event to climate change, the overall pattern is clear— anthropogenic global warming is real and will get worse barring any major changes to our patterns of production and consumption. Each year, both major reinsurance companies produce reports on the extent and cost of natural disasters including, but not limited to, storms and floods.

While necessary for crop growth and survival, water can be devastating for agriculture if it occurs out of season or in too large a quantity over too short a time. Flooding can delay planting, destroy crops during the growing season, or prevent their expeditious harvesting. Serious storms entailing high winds, torrential rain, or hail can also damage or destroy crops in the fields, in greenhouses, or in storage (Iowa State University 2010; Purdue University Department of Agronomy 2019). The scientific literature and media have provided detailed descriptions of such events in diverse major food- producing areas of China (Sun et al. 2018), Northern Europe and Russia (Lehmann et al. 2018), sub- Saharan Africa (Müller et al. 2014), Africa (Kendon et al. 2019), the Mekong Delta (Kuenzer et al. 2013; Padilla 2011), Bangladesh (Rimi et al. 2018), Uruguay River basin (Abreu et al. 2018), and the US Midwest (CTV News March 19, 2019; New York Times March 18, 2019; Molten 2019).

A detailed analysis of the impact of floods on food security was performed by Pacetti et al. (2017) by integrating remote sensing with agricultural statistics and water footprint values. The authors focused on two major emblematic case studies:

Bangladesh in 2007 and Pakistan in 2010. They concluded: In Bangladesh, the estimated lost rice is around 12.5% of the total potential produc- tion, which implies a 5.3% calories loss with respect to the total potential energy provided by rice and 4.4% of total WF [water footprint] associated to national food supply. In Pakistan, the results show a crops loss of 19% for sugarcane and 40% for rice, with a related calories loss of 8.5% and a WF loss of 13.5%. The results highlighted the countries vulnerability to flood, . . . [as] both countries [are] strongly dependent on local agricultural production. The 2007 flood event reflected badly upon Bangladeshi food security, almost doubling the existing food deficit. The same happened in Pakistan where an already scarce food supply has been worsened by the 2010 flood.

(p. 503)

[TABLE 6.2 OMITTED]

[FIGURE 6.5 OMITTED]

Some of the most extensive and detailed records of the cost of weather and climate disasters are available from the US National Centers for Environmental Information for the period 1980 to 2019 (NOAA 2019). Summary results are reproduced in Table 6.2, which shows costs totaling $1.69 trillion over these four decades. Clearly, this includes much more than crop damage. Further, a detailed examination of the data allows more precise identification of flood disasters in the United States. The following estimates of monetary damage include an agricultural component as part of the total cost: 1993 in the Midwest— $37.3 billion; 1997 in the Northern Plains—$ 5.9 billion; 2000 in South Florida— $1.4 billion; 2009 in the Mississippi River area— $3.4 billion; 2017 and Hurricane Maria— $92.7 billion; 2018 and Hurricane Michael—$ 25.2 billion; 2019 and the Midwest— costs to be determined (see also Figure 6.5).

At the global level, Munich Re and Swiss Re have assembled databases of more than 34,000 natural disasters that have occurred since 1974 (see Munich Re (n.d.) NatCatSERVICE; Swiss Re 2020; Hoeppe n.d.). Figure 6.5 summarizes economic and insured losses from weather- related disasters since 1980 (Swiss Re 2020). Over a decade ago, Munich Re (2010) had already identified an ominous trend:

The long- term trend towards ever higher natural catastrophe costs continues. . . . the number and intensity of weather- related catastrophes is expected to increase in the coming decades, largely on account of climate change.

(p. 1)

A recent study by Kummu et al. (2021) concluded that one-t hird of global food pro- duction is at risk from climate change. The authors introduce the concept of safe climate space (SCS), which incorporates the key variables that determine agricultural produc- tion: precipitation, temperature, and aridity. They conclude (p.1) that:

rapid and unhalted growth of greenhouse gas emissions could force 31% of the global food crop and 34% of livestock production beyond the SCS by 2081–2 100. The most vulnerable areas are South and Southeast Asia and Africa’s Sudano-S ahelian Zone, which have low resilience to cope with these changes.

In conclusion, the principal message about the future of agriculture in the face of climate change is somber. There is mounting evidence, as detailed above, to suggest that even if major changes in food production systems were undertaken to reduce the array of negative externalities and make these systems more sustainable, continuing releases of GHGs and resulting global warming, if left unabated, would inevitably create a crisis which would seriously, if not irreparably, threaten global food supplies and the continued viability of modern civilization as we know it. These pessimistic conclusions have been reaffirmed by a recent report of the Intergovernmental Panel on Climate Change (IPCC 2019) on climate change and land; the IPCC concludes that our current system of industrial agriculture is unsustainable. We have pursued a narrow vision of efficiency at the expense of resilience. But the challenge facing our agricultural system transcends the multitude of problems associated with the myriad of negative externalities. Intensified efforts to develop new hybrid strains of crops that are resistant to flood, drought, salinity, and pest infestation will not alleviate the profound risk from increasing global temperatures. In fact, if the NASA projections of future temperatures prove to be correct, much of current agricultural production may not be possible. In extremis, our modern societies may regress from the social structure depicted in Figure 6.1 with its inverted pyramid shape to the pyramidal structure typical of the early years post agricultural revo- lution represented in Figure 5.1. In these circumstances, we could return to a dystopian world where the majority of the population, possibly much fewer in number, devotes most of its time to eking out a bare existence from the land.

### Big Ag Good DA---Diversity Good---Key

#### Diversity is the only way to preserve all relevant benefits---each strain developed produces inherent trade-offs

Peter N. Nemetz 22, Professor, Strategy and Business Economics Division, Sauder School of Business, UBC, “5 Unsustainable Agriculture,” Unsustainable World: Are We Losing the Battle to Save Our Planet?, 1st ed., Routledge, 02/08/2022, pp. 141–214, DOI.org (Crossref), doi:10.4324/9781003199540

Intra-sectoral effects: Accompanying the loss of biodiversity resulting from agricultural production has been a similar loss within the agricultural sector itself driven by the necessities of modern industrial agriculture and the emergence of the agro-industrial sector. A relatively small number of crops account for a significant proportion of global terrestrial food production: sugar cane, maize (i.e. corn), wheat, rice, and potatoes. In an attempt to increase yields of these and other major crops, there has been a concerted effort to develop selected plant variants at the expense of genetic biodiversity. Several studies from the scientific community have warned that this loss of diversity threatens the integrity and resilience of future food supply (Cardinale et al. 2012; Khoury et al. 2014; FAO 2019c; IPBES 2019; Deb 2019). Dewi and Gonzalez (2015, p. 1) state:

Over the last two decades, 75% of the genetic diversity of agricultural crops has been lost; 100 to 1000-fold decrease over time. This phenomenon results in the decrease of ecosystem abilities to provide food for people and decrease the function [sic] of other ecosystem services.

Figure 5.13 illustrates (Tomanio 2011) the decreased numbers of commercially available varieties of seeds of ten crops over the last century. McMichael (2017, p. 249) concludes that “efficiency-driven culling of the ancient diversity of strains and types of many plant foods (such as potatoes, wheat, and bananas) has lowered the resilience of agricultural systems and reduced options for the future.”

Chart

Description automatically generated

Figure 5.13 Commercially available food crop seed varieties.

Source: Tomanio 2011.

Accompanying the decline in the variety of crops under cultivation has been a marked decrease in the nutritional value of many common foods, with proportions of protein, calcium, phosphorus, iron, riboflavin, and ascorbic acid, among others, falling (New York Times September 12, 2015; Davis et al. 2004; Halweil 2007; Poti et al. 2015). Much of this decline has been attributed to the pursuit of increased crop yields and represents a trade-off between yield and nutrient content. Efforts to offset recent declining marginal yields as the initial salutary impacts of the green revolution play out have frequently led to trade-offs with environmental sustainability, resulting in land degradation, salinization, eutrophication, increased release of CH4 and N2O, groundwater pollution, and loss of biodiversity (IAASTD 2008).

#### Diversity’s the only shot for adapting the food system to climate and water changes

Chris Radcliffe & Jessica Singh 21, Radcliffe is with the School of Agricultural and Wine Sciences, Charles Sturt University; Singh is with the Department of Nutrition and Gerontology, German Institute of Human Nutrition, “Achieving Food and Nutrition Security and Climate Change: Clash of the Titans or Alignment of the Stars?,” Exploring Synergies and Trade-Offs between Climate Change and the Sustainable Development Goals, edited by V. Venkatramanan et al., Springer Singapore, 2021, pp. 1–36 DOI.org (Crossref), doi:10.1007/978-981-15-7301-9\_1

1.3.5 Sustainable Development Goal 2, Target 5: Genetic Diversity

The ﬁfth target for food and nutrition security is to, by 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversiﬁed seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of beneﬁts arising from the utilisation of genetic resources and associated traditional knowledge, as internationally agreed.

In order to measure progress of this particular SDG target, two indicators have been established. They are as follows:

1. Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities

2. Proportion of local breeds classiﬁed as being at risk, not-at-risk or at unknown level of risk of extinction

1.3.5.1 Securing Plant and Animal Genetic Resources: Synergies and Trade-offs with Climate Change Goals

Food and nutrition security is reliant on both quantity and quality of food, and achievement of one should not be at the expense of the other. Quantity is achieved through increased global food production, whereas quality is achieved through the provision of food crop diversity. Diverse food crop varieties, both farmed and wild, are vital to integrating new traits and new variants, and their continued existence and use is essential. However, global diversity is being threatened; in fact, a recent report into the state of the world’s biodiversity for food and agriculture (FAO 2019b p 113) found that:

• Many components of food and agriculture at genetic, species and ecosystem levels are in decline.

• The proportion of animal breeds at risk of extinction is increasing; in some regions, crop diversity in farmers’ ﬁelds is decreasing; and nearly a third of ﬁsh stocks are overﬁshed.

• Species vital to agroecosystems are in decline, including pollinators, natural enemies of pests, soil organisms and wild food species.

• Ecosystems which deliver essential services to agriculture (forests, mangroves, rangelands, coral reefs and wetlands) are rapidly declining.

The narrowing of diversity in both production systems and food supplies is a threat not only to global food and nutrition security (Khoury et al. 2014) but equally to climate change goals; for example, crop wild relatives (the ancestors that provide genes for plant breeding) are beneﬁcial sources of diversity for enhanced plant adaptation to water stress or extreme temperatures. Acting to conserve genetic diversity is no longer an option but a fundamental priority for all nations, and a part of this priority is the ongoing development of gene banks. Gene banks are the world’s gene pool repository for landraces and wild crop types. The FAO estimates that there are over 1750 gene banks around the world, of which 130 hold more than 10,000 accessions each (FAO 2010), such as the Svalbard Global Seed Vault located 1300 km north of the Arctic circle (https://www.seedvault.no/).

1.3.5.2 Increasing or Maintaining the Proportion of Local Breeds Being Extinct: Trade-offs and Synergies with Climate Change Goals

Gene banks should not be relied on as the only approach to maintaining genetic diversity. A review of climate change adaptation plans across United States, Canada, England, Mexico and South America found four broad approaches to maintaining genetic diversity: land and water protection, direct species management, monitoring and planning and law and policy (Mawdsley et al. 2009). Maintaining and improving genetic diversity is essential for food and nutrition security and climate change goals; however, policy must be designed to best exploit genetic diversity in a way that beneﬁts all people equally.

Ongoing concerns regarding the sovereignty of plant genetic resources has placed a spotlight over the rights of farmers and the equal access for all nations. Trade-offs resulting from the efforts to maintain plant genetic material include, in some cases, corporate appropriation of genetic material, intellectual property rights over plant genetic material, a growing monopoly by multinational corporations over the seed market and the imposition of seed certiﬁcation for transgenic crops (Kloppenburg 2014). Efforts continue to be made to minimising such trade-offs, such as the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFA), which facilitates access to 64 crops (which together account for 80% of the plant-based food) for all ratifying nations. All nations who access genetic material through this multilateral system have agreed to pool, manage and share any beneﬁts from the use of plant genetic resources. Equal access to plant genetic resources by farmers will be further improved through the recent approval by the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas. An example of where this declaration may improve access is Article 17 of the Declaration, which describes the right to equitable sharing of the beneﬁts and to protection of knowledge relevant to plant genetic material. However, the declaration does not provide a legal basis for remuneration for genetic material – instead, it promotes existing human rights and relevant jurisdiction requirements – neither does the Declaration state who is entitled to intellectual property rights of genetic resources, rather it points to existing agreements under the current ITPGFA treaty.

Considerations for Achieving Target 5

Maintaining genetic diversity is an essential element in ‘future prooﬁng’ food and nutrition security, but only to those who have equitable access to the genetic resources. Treaties may need to be reviewed and amended so as to provide equal access to all components of genetic diversity and restrict the commodiﬁcation of genetic resources. Improved diversity and number of plant and animal genetic resources being conserved synergistically respond to climate change goals by improving global adaptive capacity and climate resilience (such as climate resilient crops). Trade-offs may include corporate appropriation of genetic material, intellec- tual property rights over plant genetic material, a monopolisation by multinational corporations over the seed market and the imposition of seed certiﬁcation for transgenic crops; however, such trade-offs will vary regionally.

#### Homogeneity crushes adaptation to warming

Mark Schapiro 18, Lecturer at the UC Berkeley School of Journalism, award-winning investigative journalist and author specializing in the environment, “3. Seeds, Inc.,” Seeds of Rebellion: The Fight to Save Our Food Supply, Hot Books, 2018, pp. 49–64

We can see that decline across the United States. Researchers at North Dakota State University and Kansas State University conducted a detailed look at the seeds planted in every agricultural county between 1978 and 2012, and discovered that the range of cultivated seeds over those thirty-four years shrank in almost every region of the country. (The sole exception from the trend toward genetic uniformity was in the Mississippi Delta region, which is showing increasing diversity as cotton cultivation drops and is replaced by food crops). The result, they predict, are yield declines as climate disruption accelerates: “[O]ne important consequence of increased crop homogeneity is the potential for yield instability with anticipated increased unpredictability in weather patterns associated with climate change.”11

Not only are local seed varieties being displaced by vast fields of identical seeds, the future adaptations that the lost parent lines could create if given the chance to mix it up in the gene pool are forever eliminated. This is occurring just as growing conditions are reaching unprecedented levels of uncertainty.

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TO UNDERSTAND MORE about what this convergence of consolidation, climate disruption, and seed extinctions means for our food crops, there’s probably no better group of people to talk to than the National Association of Plant Breeders—which happened to be having their national convention in the summer of 2017 in Davis, California. I caught an Amtrak train in Oakland and an hour later arrived at the college town, home to one of the leading universities for agricultural research. Over a sweltering couple of August days, the men and women who devote their careers to devising the next generation of crops gathered to compare notes from the field, and to share their sense of alarm about decreasing seed diversity and increasing environmental disruptions.

It was hot and muggy outside, like a science experiment on tolerance for humidity. But inside, the air-conditioned hallways were lined with photos of pests and fungi that follow the heat and freakish weather to attack crops in a spectacularly morbid number of ways—fungi sprouting in soil left moist after a downpour during a heatwave; fly larvae once killed by the onset of cold winters now able to hatch on wheat leaves when the cold weather comes later in the season; new pests with grotesque proboscises that once happily proliferated in Mexico and Central America making their way north into the warming American southwest.

Other displays showed multi-colored charts documenting the shrinking budgets of public sector seed breeding and research programs. The two visual threads seemed somehow, jarringly, connected. Research by public institutions, pursuing research focused on devising more resilient and nutritious crop varieties for the public have been the source of American agricultural innovation for more than a century. Land grant universities, ag extension services, and the like have been central players assisting farmers to adapt to changing conditions. And now, as those conditions undergo changes on a level never seen before and new threats emerge, the charts told of a steady decline in funding for public breeding programs, and a steady shift of research and development (R&D) from the public to the private sector.

One such chart, from the University of Wisconsin, Madison, showed a downward plunge from 2000 to 2013 of the USDA’s funding of public breeding, from being responsible for roughly 50 percent of all new agricultural R&D to 30 percent. Seventy percent of new cultivars now come from private industry. More and more germplasm—and the R&D that lies behind it—is getting locked behind company patents and trade secrets.

The shrinking number of possible combinations for public breeders to work with is putting our food system on an ever-more narrow foundation, according to Jack Kloppenberg, a professor of environmental sociology at the University of Wisconsin-Madison.12 Kloppenberg has conducted extensive research on the impacts of plant patenting. He commented: “If you’re a public breeder, say, you’re very interested in heat tolerance. One of the first things you need to do before you get started is to figure out if anyone has patents on that heat tolerant trait. Do you think that’s easy? It’s expensive and time consuming. So what public breeders do is stick with the stuff they know—limiting the material they’re looking at and working with.”

Needless to say, heat tolerance is not an obscure or only occasionally necessary trait: the US National Climate Assessment estimates that the temperature in the United States has risen about 1.5 degrees Fahrenheit from 1990 to 2015, about twice the rate of increase as the previous sixty years, and under current emission scenarios will continue to rise at an accelerated pace. We’re going to need as many heat tolerant seeds as we can find.

These are not just numbers on a ledger—the mission of research and development at public universities is to sustain innovations for the public good. The goal of private companies supplanting them in agricultural R&D is, first, to ensure a profitable bottom line for the mother company, which may not be the same thing as ensuring healthy and resilient food. (History is filled with examples in which that has not been the case, from the application of massive quantities of toxic chemicals that are left as residues on our food to modern grains that may be triggering auto-immune conditions among the people who consume them.) The shift from public to private breeding is making us more reliant on a narrower pool of genetic lines, concludes the Union of Concerned Scientists, threatening “our food security. Low genetic diversity in farmers’ fields makes crops increasingly susceptible to disease-causing agents, which could spread more quickly and widely than among a more genetically diverse crop.”13

Breeders tend to talk about evolution as an almost mythically powerful force, with great respect for its omniscient inexorability. “Evolution with human assistance” is how Charles Brummer, professor of Plant Biology at UC Davis, and chief organizer of the NAPB conference, describes his profession. Plant breeders, he said, shape evolution by selecting plants based on their response to pressure and threats—whether from pests, extreme temperatures, not enough or too much water, for a few examples. Do it again and again until a crop is strong and predictable enough for commercial planting.

Brummer is also the director of the UC Davis Plant Breeding Center, engaged with pioneering research on crop adaptations. In their search for new and improved characteristics, they’ve experienced option after option being taken off the table. “The trend toward tying up germplasm is not desirable,” he told me. “The restrictions impede our ability to contend with things like climate change.”

#### Seeds are weaker to pests and weeds---this forces overapplication of pesticides, which is unsustainable because of developing resistance AND wrecks diversity

Mark Schapiro 18, Lecturer at the UC Berkeley School of Journalism, award-winning investigative journalist and author specializing in the environment, “5. Genetic Roulette: Engineering the Seed,” Seeds of Rebellion: The Fight to Save Our Food Supply, Hot Books, 2018, pp. 75–94

INSECT AND WEED RESISTANCE

Genetic engineering may halt the evolutionary process, but among the creatures that accumulate around and feed off crops, evolution does not stop. In fact, like any ecological process, it continues: the corn borer is developing resistance to the toxins inside each genetically engineered Bt plant designed to kill it,13 and resistance to Roundup has become widespread. The major global association of weed scientists, representing experts in eighty countries, identifies twenty-four species of weeds that are now wholly immune to the effects of Roundup’s active ingredient, glyphosate.14 New generations of super-weeds are proliferating across some sixty million acres of soybean fields that no longer respond to the toxins in Roundup, reports the Union of Concerned Scientists.15

The result is a chemical arms race in the making—against weeds. Ever-greater individual doses of Roundup are being used, and even more potent chemicals being devised. Monsanto has begun marketing a new generation of seeds stacked with traits to resist as many as three herbicides at once. That includes Dicamba, a potent herbicide that is also prone to drift: several lawsuits have been filed by farmers in Arkansas, Missouri, and numerous other states alleging that their crops, which do not contain the engineered gene making soybeans immune to the potent herbicide, were destroyed when it was sprayed on fields by neighboring farmers. Arkansas and Missouri have actually banned the use of the herbicide anywhere in the state. Dow has developed a new package of seeds designed to resist applications of 2,4-D, which was an ingredient in the notorious Agent Orange concoction used by the US military during the Vietnam War to defoliate Vietnamese forests. The herbicide has a similar effect on weeds in the field that its more potent cousin had on the rainforests of Vietnam, denuding all in its path, as well as being deemed a “possible” carcinogen by the World Health Organization. It’s also highly persistent in the atmosphere, triggering farmer protests by a Save Our Crops coalition across the Midwest.

Meanwhile, research suggests that such blanket chemical applications would likely not be necessary if locally evolved seeds—known as “historical cultivars”—had not been replaced by ones bred to be dependent on the herbicide to begin with. Such “historical cultivars,” perform at least as well resisting weeds as do genetically engineered varieties, according to a research study published in the Journal of Chemical Ecology.16 “Historical cultivars have better weed suppression ability than modern cultivars,” the scientists conclude, and suggest that mutations which occur naturally in a crop population evolving over generations in a specific eco- system are better equipped to resist familiar and unfamiliar threats than engineered varieties designed to express just one trait. That one trait, of course, has nothing to do with strengthening the plant to resist weeds, but to resist the toxic impacts of a chemical weed killer. Meanwhile, it’s the weeds that are learning to resist the weed killer.

### Big Ag Good DA---Diversity Good---AT: Defense

#### Simplifies the environment---extinction

Dan Saladino 21, renowned food journalist who has worked at the BBC for twenty-five years, has been recognized by the James Beard Foundation, the Guild of Food Writers, and the Fortnum & Mason Food and Drink Awards, “Are we eating ourselves to extinction?,” Guardian, 9/17/2021, https://www.theguardian.com/books/2021/sep/17/are-we-eating-ourselves-to-extinction

Consider these facts: the source of much of the world’s food – seeds – is mostly in the control of just four corporations; half of all the world’s cheeses are produced with bacteria or enzymes manufactured by a single company; one in four beers drunk around the world is the product of one brewer; from the US to China, most global pork production is based around the genetics of a single breed of pig; and, perhaps most famously, although there are more than 1,500 different varieties of banana, global trade is dominated by just one, the Cavendish.

This level of uniformity has never been experienced before. The human diet has undergone more change in the last 150 years (roughly six generations) than in the entire previous one million years (around 40,000 generations). We are living and eating our way through one big unparalleled experiment.

For most of our evolution as a species, as hunter-gatherers and then as farmers, human diets were enormously varied. Our food was the product of a place and crops were adapted to a particular environment, shaped by the knowledge and the preferences of the people who lived there as well as the climate, soil, water and even altitude. This diversity was stored and passed on in the seeds farmers saved, in the flavours of the fruits and vegetables people grew, the breeds of animals they reared, the bread they baked, the cheeses they produced and the drinks they made.

Kavilca wheat is one of the survivors of disappearing diversity, but only just. It has a distinctive history and a connection to a specific part of the world and its people. It is only during our lifetimes that this singular grain, perfectly adapted to its environment and with a taste like no other, has become endangered and pushed to the brink of extinction. The same is true of many thousands of other crops and foods. We should all know their stories and the reasons for their decline, because our survival depends on it.

My entry into food journalism took place during a crisis. It was 2008, and while the world was mostly focusing on the financial turmoil ripping through the banking system, a momentous food story was also unfolding. Wheat, rice and maize prices were spiralling to record highs, tripling on global markets at their peak. This pushed tens of millions of the poorest people on Earth towards hunger and also fuelled the tensions that later exploded into the Arab spring. Riots and protests toppled governments in Tunisia and Egypt and helped trigger the conflict in Syria. For the first time in decades, people were asking serious questions about the future of our food. With 7.5 billion people on Earth and a projected 10 billion by 2050, crop scientists began telling the world that global harvests needed to increase by 70%. Calling for greater diversity seemed liked an indulgence. But now we’re starting to realise that diversity is essential for our future.

Evidence of this shift in thinking came in September 2019 at the climate action summit held at the United Nations headquarters in New York. Emmanuel Faber, then CEO of the dairy giant Danone, told the business leaders and politicians present that the food system the world had created over the last century was at a dead end. “We thought with science we could change the cycle of life and its rules,” he said, that we could feed ourselves with monocultures and base most of the world’s food supply on a handful of plants. This approach was now bankrupt, Faber explained. “We’ve been killing life and now we need to restore it.”

Faber was making a pledge to save diversity backed by 20 global food businesses, including Unilever, Nestlé, Mars and Kellogg’s – companies with combined annual food sales in 100 countries of about $500bn. At the event, Faber expressed concern that in parts of the dairy industry 99% of the cows are a single breed, the Holstein. “It’s oversimplistic now,” he said of the global food system. “We have a complete loss of diversity.”

If the businesses that helped create and spread homogeneity in our food are now voicing concerns over lost diversity, then we should all take notice. The enormity of what we’re losing is only now dawning on us, but if we act now, we can save it.

The decline in the diversity of our food, and the fact that so many foods have become endangered, didn’t happen by accident: it is an entirely human-made problem. The biggest loss of crop diversity came in the decades that followed the second world war when, in an attempt to save millions from starvation, crop scientists found ways to produce grains such as rice and wheat on a phenomenal scale. To grow the extra food the world desperately needed, thousands of traditional varieties were replaced by a small number of new super-productive ones. The strategy that ensured this – more agrochemicals, more irrigation, plus new genetics – came to be known as the “green revolution”.

Because of it, grain production tripled, and between 1970 and 2020 the human population more than doubled. But the danger of creating more uniform crops is that they become vulnerable to catastrophes. A global food system that depends on just a narrow selection of plants is at greater risk of succumbing to diseases, pests and climate extremes.

Although the green revolution was based on ingenious science, it attempted to oversimplify nature, and this is starting to backfire on us. In creating fields of identical wheat, we abandoned thousands of highly adapted and resilient varieties. Far too often their valuable traits were lost. We’re starting to see our mistake – there was wisdom in what went before.

Of the 6,000 plant species humans have eaten over time, the world now mostly eats just nine, of which just three – rice, wheat and maize – provide 50% of all calories. Add potato, barley, palm oil, soy and sugar (beet and cane) and you have 75% of all the calories that fuel our species. As thousands of foods have become endangered and extinct, a small number have risen to dominance. Take soy, domesticated in China thousands of years ago, a bean relatively obscure outside Asia until the 1970s and now one of the world’s most traded agricultural commodities. Used in feed for pigs, chickens, cattle and farmed fish, which in turn feed us, soy plays a starring role in an increasingly homogeneous diet eaten by billions of people. These dietary shifts taking place at a global level, all pointing towards uniformity, are unprecedented.

An individual human diet even a few thousand years ago was far richer in diversity than the one most of us eat today. In the Jutland peninsula of western Denmark in 1950, peat diggers discovered the intact body of a man who had been executed (or possibly sacrificed) 2,500 years ago. Inside the man’s stomach was a porridge made with barley, flax and the seeds of 40 different plants. In present-day east Africa, the Hadza, who are among the last of the world’s hunter-gatherers, eat from a potential wild menu that consists of more than 800 plant and animal species, including numerous types of tubers, berries, leaves, small mammals, large game, birds and types of honey. We can’t replicate their diets in the industrialised world but we can learn from them.

I am not calling for a return to some kind of halcyon past. But I do think we should consider what the past can teach us about how to inhabit the world now and in the future. Our current food system is contributing to the destruction of the planet: one million plant and animal species are now threatened with extinction; we clear swathes of forests to plant immense monocultures and then burn through millions of barrels of oil a day to make fertilisers to feed them. We are farming on borrowed time.

#### Makes local food systems not resilient to disaster---extinction

Helene Schulze 19, received her MSc in Nature, Society and Environmental Governance from Keble College, University of Oxford in 2017, “Cultivating Resilience,” Anthroposphere, 2/22/2019, https://www.anthroposphere.co.uk/post/cultivating-resilience

Additionally, biotechnological developments have produced genetically modified (GM) seed. These tend to be high-yield varieties, which are unable to reproduce naturally and therefore need to be repurchased annually or every two years. They cannot be saved. Crucially, GM seed is owned by the corporations which produce it. Seed here is no longer configured as a common good, but as a commodity. Currently, over three quarters of the global seed trade is dominated by just ten companies. Before merging with Bayer, Monsanto alone owned a quarter of all seeds traded. Local seed varieties struggle to compete with these desirable, high-yield varieties, and farmers are pulled into vicious cycles of dependency. Without the insurance stock of seeds from before, farmers are forced to repurchase seeds annually, irrespective of how the harvest has gone, and how their associated cash flow fares. Many simply cannot afford it.

Equally, it has meant that we have lost a vast swathe of plant species. Today, over 90% of human caloric intake is derived from just 15 crop varieties. This is despite the fact that we know of over 50,000 plant species which may be safely consumed by humans.

Anthropogenic climate change and deforestation, along with the corporate-dominated global seed trade, has placed many of these ‘unpopular’ and non-GM varieties under threat of extinction. Currently over 70% of plant species are threatened.

This corporate seed regime is simply unsustainable. It pillages the environment, endangers human resilience to climate change and profits only a select few companies. A growing awareness of these issues has led to concerted international seed conservation efforts since the 1960s.

One response has been the proliferation of local, national, and international seed banks as an ex situ conservation strategy. Seeds are cleaned, dried and stored in a humidity and temperature-controlled room. Their ability to lie dormant is harnessed and the seeds may be safely stored for potentially many years. This means that, should seed reserves of a particular plant variety ever dwindle, seed samples may be taken from the collection and reintroduced into the wild.

The flagship seed bank is the Svalbard Global Seed Vault, commonly referred to as the Doomsday Vault. Built into the permafrost on the Norwegian island of Spitsbergen, it is designed to resist natural and man-made disasters such as nuclear war and climate change. The underground bunker has a futuristic, post-apocalyptic aesthetic and protects the 850,000 seed samples inside with a 1-meter thick steel wall. Most 1,460 of the national seed banks worldwide store a certain portion of all their varieties at Svalbard, in case their own seed storage is damaged or destroyed.

There are many reasons why the seed storage may need to be tapped into. A particularly tough drought may seriously reduce a region’s wheat harvest for several years running. Frequently, wheat varieties (of which there are around 200,000 globally) or wheat-alternatives are able to produce higher yields in these drier conditions. These can be sourced from a seed bank. Climate change will highlight our need for such seed storage. Increasing temperatures in some areas and increased salinisation in others will leave farmers across the world facing severe challenges. Access to other crop varieties, most frequently older, local ones which are better adapted to these new conditions will continue to be important sources of individual and regional food security.

Seed banks even hold the potential to entirely rebuild a food system ravaged by disaster, whether natural or man-made. Wars in Iraq and Afghanistan effectively demolished their respective seed banks in the early 2000s. Amid the fighting which has killed thousands and displaced millions, the Syrian civil war has forced the country’s main seed bank to scale down operations.  Previously based in Aleppo, scientists have rebuilt the International Center for Agricultural Research in Dry Areas (ICARDA) in a dispersed manner, with staff spread over eight neighbouring nations. Svalbard opened its vaults for the first time in 2015, to return to the Syrian scientists some of the seeds they had previously kept there for safekeeping. They provided drought-friendly wheat and barley varieties, to try to stay ahead of the growing food insecurity in the war-torn nation. These seed banks are vital in national and international plant conservation efforts. They have and will continue to be immensely valuable reserves of genetic information which may prove crucial in the decades and centuries to come.

Outside the conventional international narrative of conservation exists an entire network of other actors in seed conservation. Across the world, farmers, gardeners and hobbyists collect seeds from their fields, allotments, back gardens, balconies and school gardens. These seeds are stored and saved, as living collections for reuse in the following years. While individual impact is small, collectively these savers keep many plant varieties alive and in active use.

They form part of a so-called movement of ‘seed sovereignty’. Vandana Shiva, Indian professor and activist, is frequently seen as the godmother of this now international movement. Seed sovereignty, she says, concerns ‘the farmer’s rights to save, breed and exchange seeds, to have access to diverse open-source seeds which can be saved [...] and which are not patented, genetically modified, owned or controlled by emerging seed giants. It is based on reclaiming seeds and biodiversity as commons and public good’ (emphasis added).

They form part of a so-called movement of ‘seed sovereignty’.

These seed savers often work in solitude and do not necessarily recognise their own activities as conservation work. Accordingly, it is difficult to find them referenced or studied in UK conservation literature. Who are these seed savers? What are their motivations? And why are they not more widely acknowledged to their contributions to food sovereignty and plant conservation?

I decided to find out for myself and travelled across the UK, guided by organisations like the Heritage Seed Library (HSL) and the London Freedom Seed Bank, to meet with these seed savers in their homes, gardens, and greenhouses. Over many hours and cups of tea, we talked about their seed saving activities. Increasingly, I have come to regard these savers as the unsung heroes of the seed movement. Through seemingly mundane, daily practices of tending to plants and collecting seed, these savers are enacting a form of what Laura Pottinger has termed ‘quiet activism’. While less headline-grabbing than roaring street demonstrations, this infrequently acknowledged activism does not just criticise the seed regime, but proactively creates the kind of regime they would like to see instead. The savers I spoke to all grow food and position themselves within these larger seed saving networks, such as the HSL. They collect the seed from their own gardens, dry them, and store them. Frequently, they send large bulks of the collected seed to institutions like the HSL or other seed sharing networks. Frequently these distributions are non-monetary exchanges, one packet for another or as a gift. Whilst there is still much demand for commercial seed, seed saving on a smaller level supports a micro, non-capitalist economy. This is based on the philosophy of seed as a common good, to be shared and not owned.

These networks enable savers to have other ways of accessing seed providing an alternative to dependence on corporate seed monopolies. It is not only a matter of resilience but resistance. As one saver told me: ‘I love the idea of thumbing the nose to the bad seed companies.’ In so doing, they not only reject the patented seed offered by agribusinesses, they also keep alive older crop varieties which may have otherwise disappeared.

In a less overtly political manner, I was struck by how these savers also seem to advocate a way of relating to the natural world founded on ethics of care. It is not easy to save seed. It requires prolonged attention, observation and curiosity. Each seed and plant requires specific conditions to germinate in terms of sun intensity, soil moisture and air temperature, for example. These conditions, as well as the requirements for collecting and storing the seed at the end of harvest, are learned over time, in the daily, repetitive tending to the garden.

Anthropologist Anna Tsing speaks of the ‘art of noticing’, how attentiveness to a species, space or phenomenon may yield fruitful, unexpected and rich understandings of the webs within which that thing is embedded. Through observation of changes in their plants, seed savers adapt their own practices of nurturing, for example by removing pests, watering less, or bringing a struggling plant indoors. It is almost a form of ‘tuning in’, learning with and through seeds and plants. One saver, Louise, told me that it is a practice which ‘connects me with the Earth, the plants and the cycles’.

‘Caring’, Donna Haraway writes in When Species Meet, ‘means becoming subject to the unsettling obligation of curiosity, which requires knowing more at the end of the day than at the beginning.’ This seems to apply to the practice of saving seed. It is an immersive engagement with the natural world with affective, ethical, and practical implications. Savers passionately involved with the task of saving seed feel a duty of care for the natural world and for the potential flourishing of future generations. The act of caring goes beyond a verbal expression of concern, extending to taking action in the form of seed storage. In this way, whether due to criticism of the corporate seed regime or a fear of global plant biodiversity loss, savers are actively engaged in the task of imagining and enacting a better future for the planet.

Fostering concern for seed preservation is essential for the potential thriving of human and non-human life on Earth. By supplementing national and international seed banking networks, individual and community seed saving initiatives are taking this important conservation work into their own hands. Paying attention to the practices of individual seed savers should not serve to diminish the important role of large seed banks. They do, however, elucidate the ways that resistance to corporate domination and resilience to climate change play out on a smaller scale. It can be seen even in the way we refer to savers: these stewards, guardians and protectors are keeping alive crop varieties and practices for the future. They advocate through example rather than rallying-calls, engaging with the natural world on foundations of passionate emotional engagement and willingness to learn. These qualities on individual and collective levels can help us confront and meaningfully deal with the myriad of issues facing future life on Earth.

## AT: Econ DA

### Note

Impact answers on case.

### Econ DA---2AC

#### Ecosystemic recession is structurally inevitable---its value dwarfs global GDP.

Irene Lauro 21, Environmental economist, Schroders; PhD student 2012-2015, Economics, London School of Economics; Masters, Economics, Luiss Guido Carli University, “Beyond GDP growth: why natural capital matters,” Schroders, 10/12/21, https://www.schroders.com/en/insights/economics/beyond-gdp-why-natural-capital-matters/

As the climate crisis accelerates, financial markets are paying more attention to risks and opportunities stemming from the energy transition, taking into consideration the risks related to fossil fuel production and consumption.

While decarbonising the production mix and promoting energy efficiency is essential to fight climate change, we think that markets are underestimating the fundamental role that the preservation of nature plays in the race to net zero.

Natural capital is a vital asset for the global economy. According to the World Economic Forum, more than half of global GDP depends on natural resources.

Nature plays an important role in enhancing human prosperity, as healthy ecosystems and biodiversity provide us with several fundamental benefits such as:

provisioning services including food, water and timber

regulating services that affect climate, floods, soil, disease, wastes, and water quality

cultural services that provide recreational, aesthetic, and spiritual benefits.

A recent study estimates that total global ecosystem services provided benefits of US$125 trillion in 2011, that is more than one and a half times the size of global GDP (US$75tr).

Our economies are embedded within nature and the sustainability of economic development is strictly dependent on protecting natural ecosystems. But until now, economists, policy makers and financial markets have only focused on measures of economic performance, underestimating the costs of production at the expense of the environment.

The concept of natural capital has not, over centuries of commercial activity, been systematically included in decision-making or in economic indicators like GDP.

Countries have grown and developed over the centuries while eroding natural capital, but this has not been taken into account in any metric of economic performance.

GDP ignores natural capital and does not include the harm done to the environment through activity. But to achieve a more sustainable future, economic growth should increase without harming the environment.

The financial sector, as an intersection for capital allocation, should play a key role in supporting sustainability. Financial institutions could help build environmental resilience by decarbonising their portfolios and redirecting investments in solutions to tackle climate change and should therefore include the economics of biodiversity into transactions, as highlighted in the Dasgupta Review (2021).

This means that it will be important to judge economic performance through the lens of natural capital, as moving beyond GDP growth is essential to ensure a more sustainable development given the strong link between climate change and the environment. In this paper we take a step in this direction, focusing on forests’ ecosystems, the largest terrestrial carbon sink, and a major nature-based solution to the climate emergency.

#### Our turn outweighs. Blips like COVID and Ukraine disprove their internal link, but ecosystemic recession will be unprecedented in human history.

Nicholas Stern et al. 22, IG Patel Professor of Economics and Government, Chairman of the Grantham Research Institute on Climate Change and the Environment, Head of the India Observatory at the London School of Economics; Chair, Centre for Climate Change Economics and Policy. Joseph Stiglitz: Professor, Economics, Columbia Business School and School of International and Public Affairs; Chief Economist, The Roosevelt Institute; PhD, Economics, MIT. Charlotte Taylor: Policy Analyst and Research Adviser, LSE Grantham Institute, “The economics of immense risk, urgent action and radical change: towards new approaches to the economics of climate change,” Journal of Economic Methodology, Vol. 29, Iss. 3. 2022, https://www.tandfonline.com/doi/full/10.1080/1350178X.2022.2040740

A central problem is that climate change is moving us into unchartered territory: we do not know how an increase in greenhouse gas concentrations will affect weather and how changes in climate will affect the economy, simply because our economy has never experienced in the lifetime of homo sapiens anything like what we are likely to face. We can extrapolate the future based on the past, but whether in these circumstances that makes sense is highly problematic. The underlying dynamics are not well-described by stationary processes (Milly et al., 2008). It is analogous to the problems of prediction in the years preceding the global financial crisis, when financial markets created new products which they claimed fundamentally changed the way the economy behaved; but the only data to forecast how the economy would behave was from an economy without these financial products. As it turned out, the extrapolations (forecasts) based on that data were wildly off the mark. In this case the problems are likely on a far bigger scale.

These concerns are especially important because of the large non-linearities associated with climate processes, which makes simple extrapolations from the limited climate change experienced thus far highly dubious.

#### BUT, a recession is also imminent

Goodkind 5-12 – Nicole, senior markets reporter at CNN Business

Nicole Goodkind, 5-12-2023, "Why current US recession warnings are unlike all the others", CNN, https://www.cnn.com/2023/05/12/investing/premarket-stocks-trading/index.html

Economic experts are once again ringing the alarm bells over an imminent downturn. A US recession is coming, they say, in the second half of 2023. That time frame begins less than three weeks from now.

JPMorgan CEO Jamie Dimon warned on Thursday of great economic danger lurking just over the horizon. Given the risks that lie ahead, he told Bloomberg news, “I would take a mild recession happily.”

Billionaire investor Stan Druckenmiller didn’t mince his words this week at the Sohn Investment Conference. A hard landing is coming, he cautioned, and “it’s just naive not to be open-minded to something really, really bad happening.”

For more than a year CEOs, economists, analysts and their kind have been warning of an imminent economic downturn, The economy, meanwhile, has remained relatively resilient through it all.

Things weren’t great last year: Inflation hit a 40-year peak, gas prices were elevated, consumer sentiment plunged and markets fell by 20%. Still, the United States managed to avoid a recession.

“This has been the most predicted potential recession in memory,” said Federal Reserve Bank of Richmond President Tom Barkin way back in January.

So why should we listen now?

There are two reasons, noted Paul Christopher, head of investment strategy at Wells Fargo: Higher interest rates and tightening credit.

The Federal Reserve has raised rates higher and more quickly than they have in decades, and some say that the ongoing US regional banking crisis is an early warning sign of stress on the system.

The Fed’s own experts predicted in March that “the potential economic effects of the recent banking-sector developments,” would lead to “a mild recession starting later this year.”

Bank failures can make borrowing harder, which can curb spending and weigh on economic activity. A Fed survey, released Monday, confirmed that lenders are stiffening their standards in the wake of the banking collapses — demand for and supply of loans is now close to 2008 levels.

“The bottom line for markets is that with inflation still at 5%, well above the [Fed’s] 2% inflation target, and the Fed not cutting rates anytime soon, credit conditions will continue to tighten and, as a result, a recession is coming that could be deeper or longer than the consensus currently expects,” said Torsten Slok, chief economist at Apollo Global Management.

### MMT Real---2AC

#### MMT is true---this is basic economics.

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Modern monetary theory, as a frame for thinking about macroeconomic policy, is central to the new economics of sustainable prosperity. Though there is much in modern monetary theory that is new, it nonetheless has long historical roots, in the tradition of hard monetary analysis (for a macroeconomics text which is firmly grounded in modern monetary theory, see Mitchell et al. 2016; for a primer in modern monetary theory, see Wray 2012; for a less formal explanation, see Mosler 2010).

It was developed, in the 1990s, by Warren Mosler (1996), William Mitchell (1998), Randall Wray (1998), Stephanie Kelton (Bell 2000) and others. It builds on the work of earlier Post-Keynesian economists, including Keynes himself; on the contributions of Paul Davidson, Hyman Minsky and Michal Kalecki; and on Abba Lerner’s laws of functional finance (Lerner 1943). It is also related to, and can be supported with reference to, the stock-flow consistent monetary macroeconomics of Wynne Godley, which will be discussed in Chapter 6. It is grounded in a realistic understanding of the mechanics of monetary systems; of the possible configurations of monetary institutions in a modern economy; and of the actual day-to-day operations of governments, central banks and private financial institutions under current institutional arrangements. It is directly related to the state and chartal theories of money of Georg Friedrich Knapp1 and Alfred Mitchell-Innes.2 It is consistent with the available anthropological and archaeological evidence relating to the fundamental nature of money, and its emergence in ancient societies.3 It is also consistent with the monetary theories of Karl Marx and, in modern times, Augusto Graziani4; and the horizontalism of Nicholas Kaldor, Basil Moore5 and many others. Modern monetary theorists, like these economists, reject as being works of pure fiction both the orthodox money multiplier theory of fractional reserve banking and the orthodox loanable funds view of interest rates.

According to Randall Wray, the name ‘modern money theory’ itself is derived from these words in Keynes’ A Treatise on Money: ‘the state, therefore, comes in first of all as the authority of law which enforces the payment of the thing which corresponds to the name or description in the contracts. But it comes in doubly when, in addition, it claims the right to determine and declare what thing corresponds to the name, and to vary its declaration from time to time—when, that is to say, it claims the right to re-edit the dictionary. This right is claimed by all modern states and has been so claimed for some four thousand years at least’ (Keynes 1930, 4). By this definition, money has been ‘modern’ throughout monetary history.

As for Keynes and the school of thought we now know as MMT, it would be wrong to say that modern monetary theory can be found fully developed in Keynes’ works, although there are statements in both the Treatise and The General Theory which anticipate modern monetary theory. Moreover, in a letter to James Meade, written in 1943, Keynes said of Abba Lerner, the father of functional finance, and so for some, if not the grandfather of modern monetary theory, at least a favourite uncle, ‘His argument is impeccable. But heaven help anyone who tries to put it across’.6 Modern monetary theory is an updated, fuller and more sophisticated, development out of Abba Lerner’s laws of functional finance, and Hyman Minsky’s call for an effective instability thwarting mechanism, based on fiscal policy. The difficulties of putting it across are no less severe today than they were in 1943, when that letter was written. If we are to have a second Keynesian revolution, which is more faithful to the economics of Keynes (as opposed to what became known as Keynesian economics), more resilient to attack and a basis for genuinely sustainable prosperity, they are difficulties which we must overcome.

Axioms of Modern Monetary Theory

There are three core statements, or axioms, at the heart of modern monetary theory. Once learned, they can never be forgotten, and once understood, they are self-evident. Economic analysis which ignores them, or which denies their validity, is in defiance of either the laws of accounting or the laws of science, is incompetent and is therefore liable to be misleading. The first axiom is the statement that monetary sovereign governments face no purely financial budget constraints. This is widely misunderstood and is of vital importance. A monetary sovereign government is one with its own currency and central bank, a floating exchange rate and no significant foreign currency-denominated debt. The USA has a monetary sovereign government, and this monetary sovereignty is by no means dependent on the status of the dollar as a global reserve currency. Japan, Australia and the UK are other examples of countries with monetary sovereign, currency-issuing governments. Monetary sovereignty, thus defined, is dependent on neither reserve currency status nor a country overall being a net international creditor. Australia and the modern-day UK fulfil neither of these criteria, and yet in both cases, these countries have monetary sovereign status.

The Eurozone countries are not monetary sovereigns, as they do not have their own currencies. Governments are not fully monetary sovereign if they are committed to the defence of a fixed exchange rate, whether that is against a single foreign currency, a basket of currencies or a commodity. When the USA and the UK were on the gold standard, their governments were not monetary sovereigns. This limited the policy space available to such governments in managing their economies. It is the reason the gold standard broke down in the 1930s and the reason the Bretton Woods system failed in the early 1970s. It is also the reason for the prolonged economic slump in so many Eurozone countries in the decade since the Great Recession. Even governments with their own currencies and no commitment to a fixed exchange rate are not fully sovereign if they have significant foreign currency-denominated liabilities; or at least have limitations on their sovereignty, if, like many low- and middle-income countries, they are currently dependent on imported necessities, such as food and energy, priced in terms of foreign currency, and so are vulnerable to currency depreciation on the foreign exchange market.

Modern monetary theorists normally advise central governments which are not currently monetary sovereigns to achieve or restore that sovereignty, or where that sovereignty is compromised as described in the previous paragraph, to work to eliminate the causes of the limitations on their monetary sovereignty. In a low- or middle-income country, this might involve working towards self-sufficiency in sustainable agriculture and/or green energy, supported by a job guarantee scheme, as recommended by Fadhel Kaboub and other researchers at the Binzagr Institute for Sustainable Prosperity.7 More generally, an acceptance of austerity, unemployment and poverty due to a fear that a fiscal deficit might drive currency devaluation and imported cost-push inflation is not the appropriate response to those who argue modern monetary theory is inapplicable to low- and middle-income countries. Instead, policy-makers should identify whether such vulnerability is real or imagined, and to the extent it is real, work towards resolving the structural issues which are its cause. A trade deficit which is simply a reflection of the rest of the world wishing to net export to a country is not necessarily a threat. Indeed, it can be seen as a net benefit for the country, since the rest of the world is exchanging goods and services, which are costly to produce, for domestic currency, which has a zero production cost, and are thereby adding to the well-being of domestic residents, as long as full employment is maintained. Looked at this way, trade deficits benefit domestic residents, while trade surpluses are costly, as well as being unnecessary. Just as we cannot meaningfully classify any fiscal balance as good or bad out of context of the current state of the economy, the same is true of a current account, or trade, balance. Only monetary sovereigns are in a position to guarantee sustainable prosperity, where that prosperity is based on equitable full employment, and not on private debt, or the pursuit of an unnecessary trade surplus.

Only monetary sovereigns are free of purely financial constraints on their net spending. Only monetary sovereign governments are free of the need to ‘get into debt’ and in a position to ignore threats from credit-rating agencies and the mistaken advice of those who believe financial markets can undermine their ability to maintain full employment. Monetary sovereign governments, such as the government of Japan, cannot ever run out of their own currencies. They cannot be forced into insolvency as a result of accumulating liabilities denominated in those currencies. The very notion is absurd.8

Among the insights to be derived from modern monetary theory is the fact that such governments do not necessarily need to issue debt securities at all. They may choose to do so, if such securities play a useful role in their financial system. They may continue to do so, as an anachronism, continuing with a practice which may have had value in the days of a gold standard, or at least of a fixed exchange rate which had to be defended using foreign currency reserves. They may have institutional arrangements which make it appear as though the government must ‘borrow’ by issuing debt securities before it can net spend, even though this is misleading, and in any case, those institutional arrangements could easily be changed. They may use government security issuance to manage liquidity on the private money market, for the management of interest rates, so that selling government bonds is an act of monetary policy, rather than of fiscal policy. But they do not actually need to issue treasury bonds or bills at all.

The second core statement, or axiom, of modern monetary theory, is that all economies, and all governments, face real and ecological limits relating to what can be produced and consumed, depending on the current productive capacity of the economy. It is obvious that monetary sovereign governments can cause inflation, if they choose, by spending too much themselves, or not taxing highly enough. When this happens, the total level of spending in the economy exceeds what can be produced by all the labour, skills, physical capital, technology and natural resources which are available. Occasionally, even professional economists, when attempting to criticise modern monetary theory, confuse the first and second axioms, and end up accusing modern monetary theorists of assuming that real resources are inexhaustible. We can obviously also damage and even potentially destroy our natural ecosystem if we produce too many of the wrong things, or use the wrong processes to produce what we want to consume. Ecological sustainability is not an issue which can just be swept under the carpet, and I will return to this issue in Chapters 7 and 8.

Currency-issuing governments do not need to tax us before they can spend, and once you understand the distinction between a currency issuer and the users of that currency, it becomes obvious that this is the wrong way to think about taxation. We need to obtain the government’s money: they do not need to obtain ours. Why would they need their currency, which they create, from us? Until what we will describe below as the monetary base, which includes electronic reserves held by the banking system at the central bank, as well as physical currency, is spent into existence by the government, it cannot be used to pay taxes, or accumulate in the private sector as a nominally safe financial asset. The spending comes before the taxation, or the bond issuance. The macroeconomic purpose of taxation is to create space within the productive capacity of the economy to allow for government spending on public goods without total private and government spending being excessive. In other words, the reason we have to pay taxes is to limit inflation and to guarantee a sufficient demand for the government’s money as ‘that which is necessary to pay taxes’ to support its value.

### MMT Real---1AR

#### MMT is real. It is the best model for explaining contemporary government spending.

Jim Kavanagh 18, economics writer and former professor, “Behind the Money Curtain: A Left Take on Taxes, Spending and Modern Monetary Theory,” Counterpunch, 1/22/18, https://www.counterpunch.org/2018/01/22/behind-the-money-curtain-a-left-take-on-taxes-spending-and-modern-monetary-theory/

Taxes do not fund government spending.

That’s a core insight of Modern Monetary Theory (MMT) whose radical implications have not been understood very well by the left. Indeed, it’s not well understood at all, and most people who have heard or read it somewhere breeze right past it, and fall back to the taxes-for-spending paradigm that is the sticky common wisdom of the left and right.[1]

This, despite the fact that the truth of the proposition is obvious if you think through just a few steps about the process of money-creation. What makes it hard to see is the dense knot of conventional theory and discourse in which we are entangled, and which seems impossible to cut as cleanly as MMT suggests.

But the discussion around the newly-enacted Republican tax bill has brought the issue of tax policy to the forefront again, and it’s time for the left to realize how fundamentally wrong that common wisdom is, and how continuing to argue within the phony terms of the taxes-for-revenue paradigm occludes and reproduces a persistent reactionary fiction regarding what taxes are for.

Housebound

The argument of the common-wisdom economic paradigm is that the government must collect taxes (or borrow money—we’ll get to that) to spend on whatever programs it wants to fund. In this paradigm, the government extracts money from an external, economically prior source, and uses it to pay for government programs. For both the left and the right in this paradigm, taxes are for funding government spending: money first flows into the government through taxes collected, and is then spent into economy in various programs and purchases. The arguments that ensue are over how much money to collect in taxes, from which sources, and which government programs to fund with the money collected.

Most leftists take their stance within this paradigm. Bernie Sanders, for instance, says his Medicare-for-all plan would “raise revenue” from various taxes such as income and capital gains, and from limiting “deductions for the rich.” Dean Baker suggests a 4% increase in payroll taxes to “fully fund” Social Security and Medicare.

These kinds of analyses, typical of the left, make points that are helpful in immediate political fights, and they’re also grounded in the conventional paradigm about, money, taxes, and government spending. That paradigm not only informs most thinking—whether conservative, liberal, or left-radical—about money in our society, it also informs the legal and institutional policy framework. It’s the paradigm of the household.

We’re comfortable with the household paradigm because it reflects everyday reality. The household has to get money from somewhere to spend it. It’s obvious. But, also obvious, the household (or business or state) does not create money. That teensy little huge fact makes the household-government finance analogy wrong and wildly misleading. Unless we take that fact as of no significance—And how could we?—we need another paradigm. Analyses and critiques—no matter how radical—of government financing as if it worked like household financing are based on false premises, and false premises lead down meandering dead-end paths to wrong conclusions.

We have to reject the household analogy whenever it comes up from any source, including our own minds, where it will sneak in. Most leftists, I’m afraid, do end up assuming it, and ignoring the huge little fact that it cannot be right. We need another paradigm, one that’s more truthful and therefore opens more effectively radical paths.

Where to start? Well, think of how different things would be—the different questions and problems and possibilities you would face—if your household could create money.

What difference does it make politically? One can say that Social Security can be fixed by raising payroll taxes just a bit more, or one can say that Social Security can be fixed by typing a few keystrokes. Which discourse is more cogent? Both fixes might “work” in some sense, but which analysis perpetuates mistaken, obfuscating, and conservative premises and structures, and which one reveals the true conditions and radical possibilities of, the way government financing really works? To even see the second alternative, we have to abandon the household paradigm.

Nobody wants to find that the framework of critique they’re so comfortable with, and good at, is based on false premises, but leftists should at least take a look. I may make some mistakes here, but I’ll give it a try.

Premises, Premises

For me. MMT has demonstrated persuasively that the entire conventional taxes-for-revenue problematic, as an economic paradigm, is a crock, a fiction, a set of mystifications, which needs to be swept away—and replaced with a paradigm that opens more radical possibilities, and has the advantage of being true. Yeah, it’s like that. As the quote attributed to Henry Ford goes: “”It is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning.” Leftists would be foolish to think either that Henry did not know of which he spoke, or that they should not try to figure out what he meant.

A whole set of hand-wringing questions about taxes, spending, debt, and deficits disappears, simply vanishes, in the light of the singular, indisputable fact—MMT’s first premise—that the federal government, and only the federal government, creates money.

Since Nixon ended the gold standard in 1971, the dollar has been a fiat currency and the United States has been a Monetary Sovereign.[2] This means that dollars are now created by the federal government, with no concern for representing any physical commodity.[3] And the federal government can create as many dollars as it wants, as numbers in electronic account ledgers, without “collecting” any dollars in advance. Whatever economic reason there is to limit the amount of dollars the government creates (we’ll discuss that below), it is not because the government hasn’t previously “collected” enough of them in taxes (or fees, loans, etc.).

Political and legal conditions may be imposed—and they should be the focus of interrogation and critique—but that is not a matter of economic necessity.

As a matter of economic logic, taxes do not precede and provide the money for, government spending; government spending precedes and provides the money that is later collected in taxes. It’s not “tax and spend”; it’s “spend and (then) tax.” That’s the sequence. Every dollar paid in taxes is a dollar that was created by government authority.[4] There is no place else it could have come from.

With a fiat currency, spending and taxing are economically separate, parallel activities. The government does not need taxes to spend; it needs a decision. Not taxes, but the political will of the government, is the source of government spending. The government can create money for any program it has the political will to fund, whether healthcare or nuclear weapons, prior to and apart from, collecting any taxes. Of course, it makes all the difference where the spending goes. who decides that, and by what mechanism. And that depends on the character of the “government,” the extent to which it is the instrument of a democratically-empowered citizenry or off the ruling class oligarchy. Those are exactly the questions MMT brings to the fore.

So, if taxes are not a revenue source on which government spending depends, what are they for?

Taxes are that portion of the money the government has spent into the economy, and upon which the economy depends, which the government withdraws for reasons that have nothing to do with needing to collect money to spend. Economically, they are for controlling inflation, and socio-politically, they are for promoting valued public policies—the first of which, for the left, is to prevent gross inequality.

Limiting inequality, not revenue collection, is precisely what taxation is for, the core progressive purpose of taxes—including a graduated income tax and the crucial estate tax—in a capitalist society. (And we are here talking about a capitalist society.) As Piketty and other have shown, it is probably the single most effective instrument of “non-reformist reform” for achieving that purpose.

To be crystal clear (because it sneaks in), when I say that taxes are used to “prevent gross inequality,” that does not mean “to fund social programs”; it means, simply and elegantly, to prevent people from becoming too rich.

Again, with a fiat currency, spending and taxing are separate, parallel activities. Though the conventional paradigm has us talking about it this way, taxes do not take money out of one activity in order to pay for another. Money can and should be spent on healthcare, apart from any taxation. Highly taxing the rich does not take extra money from them in order to “pay for” healthcare. It takes extra money from the rich in order to take extra money from the rich, a social good in itself.[5]

Surtaxing the rich is a social good from a rational economic perspective because it takes money out of the economy to control inflation and prevent wealth hoarding and speculation, and surtaxing the rich is certainly a social good from a progressive perspective because it limits inequality

So, surtaxing the rich does not transfer funds directly to pay for another activity like healthcare, but it does help configure the money supply on a macro level to enable more social spending. It averts the inflation that would occur if both a lot of spending on healthcare and the infinite appropriation of money by individuals were tolerated. Taxes don’t raise funds; they do help control the money supply. Taxes don’t “pay for” anything, but are they are a means to “un-pay” certain actors.

Indeed, in regard to wealth inequality, taxes can and should be used to create an income ceiling that is either absolute or becomes asymptotically more difficult to approach—thus both controlling inequality and eliminating the excuse of inflation as an impediment to robust progressive social policies. Is inflation your big fear? Well, how better and simpler to control inflation than to take dollars back from those who have an excess of them?

What does the government do with the taxes it collects? Nothing. What’s done is done, in spending. A dollar the government takes—the number it transfers from an account—in taxes cancels out a dollar previously issued—the number it had transferred to that external account. The result is zero. The dollar disappears, is zeroed out. That’s how taxes control inflation.

On the spending end, the “disciplining” economic consideration for avoiding inflation is to assure that the amount of money the government creates correlates with the value that economic activity in society creates. It’s an error to confuse money, which only the government creates, with value, which is created in the social economy. Monetary policy should be designed to facilitate the exchange of values produced, and encourage the production of new value. Money circulates as oil in the gears of the productive economy. Too much, and it floods the process; too little, and the process seizes up.

The decision about how much money the government should spend into the economy does not need to be based on a revenue forecast—what the Congress uses, through the Congressional Budget Office (CBO)—but on an analysis of the productive forces (including labor and capital) that can be put to use generating useful (and in capitalist terms, “tradeable”) goods and services. As Ellen Brown says: “Money can be added to the point of full productive capacity (full use of workers, supplies and machines) before adding more will drive up prices.” This is, in fact, the kind of calculation the Federal Reserve Bank does to control the money supply via interest rates. The Bank knows how it works.

### MMT Real---AT: Balance Sheet Consolidation

#### MMT’s conflation of the Fed with the Treasury is an analytical shortcut with zero relevance to the underlying truth of the theory.

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MMT Basics

The simplest way to explain the essentials of modern monetary theory is within an apparently unrealistic institutional framework, with a consolidated government sector and no separate central bank, or where the central bank is just a government department. This conflation of the central bank with the central government is sometimes objected to by critics of MMT, because it is not consistent with current institutional arrangements. 9 I accept that criticism—noting, however, firstly, that as Minsky said, institutional arrangements which are currently a barrier to the pursuit of the public purpose can always be changed; and secondly, that the axioms of modern monetary policy still apply under more complicated institutional set-ups. To put it another way, such critics have missed the point.

If we, for the moment, defy the critics and consolidate the central bank into a government sector, then there is no distinction between the balance sheet of the central bank and the central government. The following points are then rendered very clear:

• Government expenditure involves the direct creation of bank deposits and bank reserves. Governments literally spend via keystrokes, and there are no financial limitations on government spending, beyond normal budgetary processes. Government spending is ‘financed’ when it is authorised, purely by being authorised.

• Since there are no financial limitations on government spending, the government does not need to tax or to generate other cash flows for itself before it can spend. It has, therefore, no fiscal motivation for issuing debt securities. Government bonds and bills are unnecessary, at least from the perspective of financing government spending.

• Taxation exists not to finance government spending, but purely to modify private-sector behaviour and economic outcomes. Taxation is there primarily to limit private-sector purchasing power by reducing disposable incomes; to create room within full employment output for non-inflationary government spending; and to create sufficient demand for government money to maintain its acceptability and price stability. In addition, the conventional micro-economic functions of discouraging undesirable activities and contributing towards a socially acceptable distribution of income and wealth remain valid.

• In this institutional set-up, there is no distinction between sales of government securities by the central government (which are conventionally seen to have the role of ‘funding’ the government deficit and avoiding its more inflationary ‘monetisation’) and sales of securities by the central bank (which are concerned with the management of bank cash reserves and the maintenance of the official interest rate target). The former motivation for bond issues, as I have already stated, is not a valid one, which leaves us with bond issues being justifiable only for the purposes of interest rate maintenance on the overnight cash market. Sales of government securities in this institutional set-up can only be justified for this purpose, which makes them monetary policy operations rather than fiscal ones, and as a means of providing a safe, interest-bearing asset to fulfil the requirement for a nominally safe benchmark asset in private- sector portfolios.

• The overall size of the government relative to the private sector remains a political issue, depending on the preferences of the electorate for public goods as opposed to private goods, and on the level of taxation which is necessary to ensure that total government and private-sector spending does not exceed what is consistent with non-inflationary full employment. The fiscal balance is then free to move over the cycle, in response to automatic stabilisers and discretionary policy changes. The balance is mainly determined endogenously, by non-government-sector spending and saving behaviour (where the non-government sector includes both the domestic private sector and the rest of the world).

The absorption of the central bank into the government sector, so that it is not treated as a separate institution, purely facilitates clarity. The validity of modern monetary theory is not dependent on consolidating the central bank into the government in this way. The above claims remain true, in other words, even when the central bank exists as a separate institution from the central government, as long as the central bank is prepared to ‘lend’ to the central government without limit; to purchase government bonds when required in the primary market; to provide the central government with an unrestricted ‘overdraft facility’; or just to purchase government bonds without limit in the secondary market, as the Bank of Japan has been doing in 2017 and 2018. Just a commitment by the central bank to never ‘bounce a government cheque’ is more than enough. Central banks do not ‘bounce government cheques’ in monetary sovereign economies.

Government net spending then generates an asset for the central bank, in the form of government securities, or a government overdraft, to match the liability of increased commercial bank reserves, and, of course, increased bank deposits for the private sector. There remains no financial limitation on government spending. Everything else remains as before. Although it may appear to be the case that government spending is financed through taxation or bond sales, as they lead to credits on the government’s balance at the central bank, which are, in an accounting sense, ‘necessary’ to permit government spending from this balance, this is an illusion. To fall for such an illusion is to display a lack of understanding of the monetary system.

It is an illusion because it is a misleading way of describing financial processes. In practice, the government can still spend without limit, through the use of keystrokes, and buy anything which is available for purchase in domestic currency. The existence of a separate institution called a central bank, with its own balance sheet, does not alter the fiscal space available to a monetary sovereign government (Fullwiler 2010). It is, in effect, just a convention of public finance accounting.

That such governments can, and generally do, act as though they need to raise taxes before they can pay for their spending, can be put down to ignorance or to politics. They may issue government securities, as Lerner suggested, because they think it is a worthwhile thing to do, given the role played by those securities as default risk-free financial assets for the private sector, and across the financial system. They may do so, however, for purely anachronistic reasons, or out of ignorance, of possibly for political reasons once again. If current institutional arrangements, which do not change the truth of the axioms of modern monetary theory, obscure that truth and mislead policy-makers, many economists and the general public, there is a good case for changing and simplifying those arrangements. Central banks are effectively just departments within the government, even if important decisions made within them, for example on official interest rates, are made, for good or ill, independently of elected politicians.

#### Balance sheet consolidation isn’t supposed to be literally real, it’s an analytical shortcut.

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Three existing critiques of MMT are particularly relevant from the perspective of degrowth. The first relates to the concentration of power within the macro-financial architecture. A key assumption of MMT is that the balance sheet of a country’s treasury and its central bank can be treated as one consolidated entity, a simplification that has been criticized by many Post-Keynesians (e.g. Kadmos & Anthony, 2000; Lavoie, 2013; Palley, 2019; Sawyer, 2019). MMTists respond that this simplification clarifies the causal relationship of taxation following spending, and the role of ‘state money’ and government bonds as assets for the private sector (Tymoigne & Wray, 2013). Additionally, even “independent” central banks effectively support government spending, primarily through either direct or “tacit” monetary financing (Gabor, 2021; Tymoigne, 2014; Felipe and Fullwiler, 2021). This balance sheet consolidation is an analytical choice (mainstream macroeconomic models do the same thing on a regular basis) and the same conclusions can be reached without consolidation (Wray 2015).

### MMT Real---AT: Cap Good

#### Degrowth is the only way to save capitalism---otherwise it’ll collapse due to overshooting ecological limits.

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1

Introduction

Since the industrial revolution, the global economy has experienced exponential growth due to high productivity increases. Although this exponential growth performance raised welfare in several countries, it is argued by many that such a growth-oriented strategy is not sustainable. The degrowth movement is one of the criticisms of the economic growth target of macroeconomic policies.

The modern macroeconomic theory with different approaches suggests that economic growth is one of the three main macroeconomic goals with price stability and full employment. None of the academics and policymakers are in doubt about the necessity of price stability and full employment. However, it is not that easy to suggest that there is a consensus on the necessity of economic growth. In the last decade, the degrowth movement has come up as an alternative to growth-oriented economic policies. The proponents of this movement suggest that higher levels of gross domestic product and household consumption are not convenient measures for welfare. The mainstream theory states that the welfare of the nation is the sum of the welfare of the households which theoretically depends on the level of consumption. Briefly, the more a country can consume, the more welfare it will have. However, the supporters of degrowth point out the need for some alternative measures of welfare. They assert that a higher need for consumption creates pressure for economic growth which finally leads to a decrease in resources. The degrowth movement is associated with the “limits to growth” hypothesis which emphasizes the limits of our world and asserts that it is not possible to sustain economic growth in its current way (see Meadows et al., 1972).

For years, both developed and developing countries try to raise their total output over time. Developing countries try to raise their output level to catch up with the developed countries, while developed countries raise the output to reach higher levels of welfare. However, how long will this increase continue? How will the Earth’s limited resources sustain these objectives? These are crucial questions about the future of the growth-oriented policies. Both advocates and opponents of the mainstream economics should focus on these questions to find ways for a sustainable future of the planet. Hence, the study aims to discuss the opponent approaches, the critiques, and the propositions of the degrowth movement. To do that, we first present economic growth from a historical and theoretical perspective along with its negative externalities in Sect. 2. Then, in Sects. 3 and 4, we discuss the concept of degrowth as an alternative to current problems of capitalist system. Section 5 concludes.

2

Economic Growth as a Primary Economic Goal

2.1

A Brief History of Economic Growth and Basic Concepts

Although the history of economic growth can be traced back thousands of years, we may suggest that the considerable global economic growth started with the industrial revolution. Until then, the world’s total real output was at a nearly constant level. According to Maddison (2010), in the sixteenth and seventeenth centuries, the per capita GDP growth rate in the world was around 0.04% per year. From the beginning of the eighteenth century to the last quarter of the nineteenth century, this rate increased to 0.20%. Since the last quarter of the nineteenth century, with the spread of the effects of the industrial revolution, the growth rate of world GDP per capita rose to 1.1%. By the second half of the twentieth century, improvements in many fields such as chemistry, energy, and automation systems caused this rate to dramatically rise to 2.26%.

The remarkable increases in economic growth rate have brought the question of what the basic dynamics of economic growth are. The sources of economic growth have been an important focus since the classical school. However, with the increasing effects of the industrial revolution, economic growth has become a much more popular area. The first growth models that emerged in the twentieth century mainly focused on the accumulation of capital stock. In the first half of the century, a Keynesian-based economic growth model emerged within the framework of the contributions made by Harrod (1939) and Domar (1946) to the literature. According to Harrod-Domar model, the multiplication of the marginal product of capital and the saving rate raises the growth rate of GDP, while the depreciation rate decreases it. By making some additional assumptions and considering the contributions of the Harrod-Domar model, the neoclassical school started to explain the sources of economic growth in the second half of the twentieth century. The fundamental neoclassical growth model, which was developed independently by Solow (1956) and Swan (1956), included the labor force as a factor of production. Besides, the Solow-Swan model differed from the Harrod-Domar model, since the ratio of capital to output was not fixed. In his 1957 work, Solow made it also possible to decompose labor productivity on basic components with the idea of growth accounting. This simple but functional method is still used today.

The second half of the century has been a period in which economic growth was studied from many different perspectives. In this period, beside the considerable use of mathematics, subjects such as intertemporal preferences, technology, and human capital began to be included in the models. In the 1960s, Cass and Koopmans developed the model based on intertemporal household consumption, which was introduced by Ramsey about 40 years earlier. Although it has a neoclassical content, this model differed from the Solow-Swan model because it was based on the fact that the saving rate was not constant over time. The endogenization of the saving rate brought the growth model very close to the flow of real life (see Ramsey, 1928; Cass, 1965; Koopmans, 1965). Even today, many modem growth models are built on the outcomes of this model.

In the Solow model, technological progress was considered as an exogenous factor. With the development of some early contributions to the literature in the 1960s (i.e., Arrow, 1962; Uzawa, 1965) and later in the 1980s, it became possible to define technological development within the model. This approach, which is called the endogenous growth theory, looks for the neglected sources of technological development and, accordingly, economic growth (see Romer, 1986, 1990; Lucas, 1988; Rebelo, 1991; Grossman & Helpman, 1991; Aghion & Howitt, 1992). All the studies dealing with the case from an endogenous perspective suggested that technological progress which was determined by some internal factors within the model is a substantial process that raises the productivity of inputs. Thus, investing in technology is important as is investing in capital. By engaging in research and development activities, firms and nations can enable innovative ideas to emerge. Each of these innovative ideas has the potential to influence the total factor productivity.

The 1960s witnessed some pioneering studies not only in terms of the endogenization of technological development but also in terms of incorporation of the quality of labor into growth models. The idea that the quality of labor is important when making inferences based on the production function was put forward by economists such as Mincer (1958) and Becker (1962). In this context, human capital has been defined as a new form of capital. Later, some studies such as Mankiw et al. (1992) and Barro (2001) empirically examined the effects of differentiation in human capital on economic growth.

Almost all the growth models we have mentioned so far refer to the models that are expressed as the mainstream of the economic growth literature. It is seen that economic growth is an absolute goal in all these models, and to increase total production, the essential ways are sought. At this point, the following questions come to the front: Is it possible to satisfy such an endless desire for growth forever? Or, in other words, how possible is it to grow forever on the resource-limited planet we five on? Is it possible for all countries to grow together?

2.2

Reducing Problems or Creating New Ones?

Although economic growth is aimed to increase the welfare of humanity, the fact that growth becomes a dominant economic goal also causes some problems. As stated in the previous section, the main source of economic growth is capital accumulation. The capital accumulation is realized through the supply of household savings to the fund market and ultimately their transformation into investments. This cycle will not change as long as capitalism continues. In other words, capital owners—or firms—will always try to raise their total capital stock with increasing profit rates. Undoubtedly, maximizing saving rates to increase investments cannot become the primary objective. The ultimate purpose is to increase the consumption level of the society and accordingly the welfare. Therefore, Phelps (1961) emphasized the “saving rate that maximizes consumption” and expressed this situation as the “golden rule of capital accumulation.” The fact that there is an optimal value between the shares of income allocated to savings and consumption also means that some problems will arise in case of deviation from this optimality. If we look critically, this situation actually presents us with another view of the conflict of interest between the capital owners and the households. It is only possible with high saving rates that capital owners demand abundant funds with the greed for profit. This means that the ratio of consumption to income will decrease. According to the golden rule perspective of Phelps (1961), if an optimal saving rate can be applied, this will yield higher output in the economy. Besides, since the total saving stock of the economy is nothing short of the multiplication of the saving rate and output, the economy will have higher savings and thus higher investment stocks. However, optimality is a possible but rarely seen situation in economics. So, ensuring the outcomes of this perspective is not that easy.

Consequently, the mainstream growth theory does not contain a contradiction or conflict of interest in itself. However, is economic growth the ultimate expectation of the capitalists? Does saving supply depend on an optimal saving rate? The answers will most likely be no. Briefly, the inferences of the mainstream growth models are consistent only if the conditions of the model are isolated from the real-world conditions.

Yet another problem with the capital accumulation statements of the mainstream theories is the linkage between savings and investments. The mainstream perspective suggests that savings and investments are equal by definition. In our era, it is easy to reach data for many countries. According to the data, savings and investments are almost never equal. There are many reasons for this inequality such as the outflow of domestic savings to foreign countries, the inflow of foreign savings into the domestic economy, and the existence of the shadow economy. Besides, incorporating the money market dynamics can also change the outcomes of the models. Any imbalance between money supply and demand will affect the share of the income allocated to savings. Depending on the increased amount of money, financing the investments may become easier, and the level of investment may increase. However, even in this case, potential investors may not make an investment decision due to insufficient demand in the market or some potential risks.

At this point, it is of great importance whether the profit greed of the capitalists is a desire that can be satisfied. Historical findings show that greed for profit and accordingly profit rates tend to increase, but this tendency leads to some economic problems (Piketty, 2013). Surely, in our era, the return on capital depends not only on physical capital investments but also on financial capital investments. In fact, the latter has a much greater impact on economic bubbles and turmoil. Piketty claims that if the rate of profit from capital is higher than the long-term growth rate, resource distribution and income inequality will deteriorate. He emphasized that to get rid of this possible bad situation, the income tax should have a progressive structure.

The relationship between the environment and the economic growth has been studied in many theoretical and empirical studies in the literature. Most of the studies are based on the environmental Kuznets curve (EKC) hypothesis. According to this hypothesis, the relationship between income per capita and environmental degradation draws an inverted U-shape curve. In other words, increases in per capita income will initially raise environmental degradation, but then this effect will be reversed (Stem, 1998). Dinda (2004) attributed this inconstant effect of the development process on the environment for multiple reasons. As societies develop, the share of production will pass from the agricultural sector, which produces cleanly, to the manufacturing sector, which harms the environment, and from there to the services sector, which produces cleaner. As another reason, Dinda stated that with increasing income level, the clean environment preferences of people will increase. However, if we criticize this inference, we may suggest that in developing countries the transition between manufacturing sectors to services sector is not smooth. Since firms in the developed economies outsource some polluting activities in developing world, increasing output may not reduce environmental deterioration even in the long run. Thus, the generalization of the EKC hypothesis is not possible (see also Liu et al., 2019).

Nevertheless, if we interpret the arguments of Dinda (2004) critically for developed countries, it is not that easy for this transition to take place so smoothly. Firstly, how long will it take for the polluting effect of the manufacturing sector to be replaced by the cleaner production of services sector? Secondly, is it possible for society to prefer a cleaner environment only with the increase in per capita income? Although it is difficult to give a clear answer to the first question, note that it will take a certain period to compensate for the environmental damage that will occur during the “long term” in question. The answer to the second question is no. Rather than per capita income, the income distribution, education level, functionality of institutions, and quality of governance determine the clean environment preference of the society.

As we mentioned above, as long as the desire for growth continues to become the primary goal, the deterioration in income distribution and environmental quality will continue to increase. The extent to which growth is sustainable in an economy where income is not distributed fairly is an important area of discussion. On the other hand, it is controversial how a society whose environmental resources are destroyed can continue production. Undoubtedly, these questions reveal the impossibility of endless growth. Even if economic growth will remain the primary goal, it is essential to get it in a sustainable form. Economics is a mix of preferences and concessions. The long-term damage caused by compromises must be taken into account.

Another issue for the economic growth goal is that it is not possible for all countries to grow together. The current global economic system contains inequalities between countries in many aspects. Trying to grow with debt burden, technological deficiencies, and limited educational opportunities makes the progress of developing countries difficult. Unfortunately, overcoming these obstacles is not only at the initiative of developing countries. The continuity of the system of developed countries causes developing countries to experience such problems.

2.3

Is Economic Growth Indispensable for the Mainstream Economic Ideology?

If economic growth is to be discussed as such a priority goal, it is necessary to examine whether economic growth is indispensable or not. In many ways, mainstream economics methodologically brings an abstracting perspective to the real-life notion of economics (see Colander et al., 2004). Heterodox schools argue that axioms and assumptions embedded in mainstream economics are defined to lay the groundwork for the defended economic ideology (see also Lee, 2008). While this abstracting and oversimplifying stance of mainstream economics makes it possible to theorize microeconomic relations, it also brings with it many problems on the macro side.

We cannot separate developments and paradigm shifts in economic theory from economic events. Although Keynesian economics gained significant support in the first half of the twentieth century, the weight of the neoclassical school began to be felt in macroeconomic policies as of the second half of the same century. At the same time, radical transformations took place in the global political economy. In this context, we can suggest that the last period in which today’s mainstream economics took power coincided with the period when the global economic system also underwent a remarkable transformation. In this new order, in which capitalism has gained a global structure, uniform economic policies have been proposed in a general way to countries with different development paths and different social characteristics. Unsurprisingly, all these policies were aimed at satisfying the profit greed of the capitalist class and thus increasing investments. In short, economic growth is an indispensable goal for current mainstream global politics and economics.

However, at this point, the following question comes to mind concerning our discussions above: How can this indispensable economic growth goal be sustained on a planet of scarce resources? From this point of view, endless growth and the continuation of this system do not seem possible. Another mystery is whether the increase in economic growth and capital accumulation will cause a crisis due to the decrease in profit rates, as Marx (1894) stated. Or will the system be softened and continued with alternative solutions such as the degrowth movement? Of course, the degrowth movement alone cannot dispel the Marxist critiques on the end of capitalism. Because what is promised is a softened version of capitalism, for those who have a Marxist approach, this option will only delay the destruction of capitalism, nothing more. Among these two possibilities, it would be appropriate to touch on the details of the degrowth movement, which is relatively new and promises an alternative option.

3

An Alternative Movement: Degrowth

Ever since man began to use fire and tools, he has been shaping the world he fives on in line with his own needs and passions. In the era of hunting and gathering, man, who did not have the drive and power to consume the resources on the planet, quickly reached this power with science, discovery, and inventions. On the one hand, the needs brought about by the changing lifestyles and, on the other hand, the passions revealed by the changing motives increased consumption and production rapidly and almost declared war on the limited resources of the planet.

The struggle of man against nature and the planet, which will bring his own demise, has been going on for a very long time. But history is full of examples of how the unilateral exploitation of nature can destroy civilizations. The capitalist transformation, which started with Columbus sailing to the Atlantic Ocean, was one of the first steps of the destruction we are in today. The transfer of the wealth and labor power of the continents discovered by colonial activities to Europe led to the industrial revolution. While the industrial revolution changed the dimensions of production at an incredible speed, it also divided the planet into a center and a periphery (Foster, 2002, p. 15). A trading system was formed for the surpluses created after the agricultural and industrial revolutions. For the capitalist system to continue, consumption and production must constantly grow and reach new markets. That is why capitalism and growth are inseparable concepts. However, the view that the invisible hand of mainstream economics can solve everything with the price mechanism still does not seem to be able to realize the limits of our planet’s resources.

The planet we live on has delicate balances. Greenhouse gases, which surround our planet like a blanket, keep the temperature of our planet at 15 °C, allowing living things to live. The greenhouse effect caused by fossil fuels, gases released into the atmosphere, the reduction of forests, the increase in industrialization, and consumption trends increase the temperature of the planet. However, for the health of the planet and the sustainability of life, the temperature rise must remain below 1.5 °C. The rate of greenhouse gases in the atmosphere increased rapidly after the industrial revolution, and this increase continues at a faster rate today. If greenhouse gases cannot be reduced, it is calculated that the global surface temperature will increase by 3-4 °C until 2100 (IPCC, 2018). Extreme weather conditions caused by temperature rise will destroy biodiversity. Floods, hurricanes, fires, and droughts caused by temperature changes will destroy many species and vegetation and turn much of the world into a desert. Agriculture will not be possible due to drought, and epidemics and deaths will increase due to lack of access to water and food. Rising sea levels will affect approximately 50 million people, resulting in mass migrations. In order not to encounter these disasters or to reduce the dimensions of the disaster as much as possible, humanity, who made the planet this way, needs to take immediate action (IPCC, 2018).

The main factor that reveals global warming and its indirect effects is carbon emissions. However, it does not seem possible to reduce carbon emissions without changing the capitalist mode of production, whose existence is indexed to growth. As a matter of fact, naturalist Boulding (1966) criticizes developmental economists: “someone who believes in infinite growth is “either a madman or an economist.” Moreover, even the most well-known and simplest definition of economics says that resources are scarce.

Raworth (2017), who argues that there can be no endless economic growth, states that the approaching climate crisis is an opportunity to forget all the basics of economics and learn from the beginning. Raworth explains with the example of doughnut how to protect the planet on which we all depend and to establish a future that can meet the needs of all people on it. The interior of the doughnut represents the social base that everyone must reach, and the exterior represents the ecological ceiling that should not be crossed. The social basis consists of 12 items that include basic needs such as food, education, shelter, equality, and justice. The ecological ceiling represents issues affecting the future of the planet, such as climate change, acidification of the oceans, and loss of biodiversity. Four of these nine problems (biodiversity loss, climate change, nitrogen, phosphorus loading, and land conversion) have already crossed ecological boundaries.

Between the two sets of boundaries of the doughnut lies a sweet place, which is both an ecologically and socially safe and fair area. The first of Raworth’s suggestions is to get rid of the GDP scale so that people can be in this sweet and beautiful part of the doughnut and save the planet. It is necessary to realize that human is a creature who does not act rationally and the economic system should be designed accordingly. A distributive system that eliminates inequalities should be established. Growth is not necessary, as mainstream economists put forward it. The important thing is not to grow, but to develop (Raworth, 2017; Steffen et al., 2015).

What Raworth is talking about is not new. In the 1950s, against the growth dependence of capitalism, the concept of zero growth (steady-state) economy which was based on Thomas Malthus, Adam Smith, David Ricardo, and John Stuart Mill was introduced. By considering the population and arable land limit, Malthus was one of the first economists to state that growth is far from sustainability. Mill, in his Principles of Political Economy of 1848, argues that the steady state of population and capital will not constitute an obstacle to the development of humanity. When the economic growth stabilizes, economic goals of the society will evolve from the quantitative side to the qualitative side, and the steady state will be reached. According to Mill, the best condition for human nature is one where no one is poor and no one wants to get rich (Ulucak, 2018, p. 128).

Mumford states in his 1938 work, The Culture of Cities, that “never before in recorded history such large masses of people lived in such a brutally degraded environment” (Foster, 2002, p. 67). It should be noted that 75 years have passed since this statement. Continuing with Mill’s ideas, Mumford also stated that the stagnation economy is not just an ecological necessity; it should be combined with the basic concept of communism, which provides the households with a standard life and distributes the earnings to the entire society.

The 1970s is the period when Mill’s views were deepened. Herman Daly (1974) made statements against growthmania, based on entropy, the second law of thermodynamics. The first law of thermodynamics states that matter and energy are fixed and cannot be created or destroyed. This change is from the usable to the non-usable, from the valid to the invalid, and from the regular to the irregular. The basis of the concept of entropy is based on the Roman Horace, who said that “time devalues the world.” Entropy means that everything in the universe is inexorably heading toward chaos and extinction. Accordingly, all the mainstream economic theories which are based on the first law of thermodynamics, stating that the environment is inexhaustible, are wrong (Gundiiz, 2006, p. 347-350).

The economist who adapted entropy to economic theory and is considered the founder of thermoeconomics is Nicholas Georgescu-Roegen with his 1971 work The Entropy Law and The Economic Process. Georgescu-Roegen, criticizing neoclassical economics based on Newtonian mechanics, argues that the energy used in economic processes is irretrievably destroyed. The increase in resource and energy use increases entropy and brings the inevitable ecological disaster closer.

The entropy that accelerated after the industrial revolution began to accumulate much faster in the 1960s when capitalism was in its golden age. Increasing concerns about the destruction caused by capitalism on the planet led to the establishment of the Club of Rome in 1968, which tried to make predictions about the future of the planet and humanity. The Club of Rome asked the US Massachusetts Institute of Technology to prepare a report on the future of the planet. The report “The Limits to Growth,” which took 4 years to prepare and reveals the shocking facts, had a cold shower effect all over the world (Baggil, 2021).

The report shows that the planet’s limits will be reached within a century if industrial production, resource consumption, environmental pollution, waste, population, and growth trends continue. Hall and Day (2009) indicate the main variables used in the modeling of the report. These are resources, births, deaths, services and industrial output per capita, food per capita, pollution, and population. As resources are being depleted rapidly, deaths are decreasing, and population and pollution are increasing. However, it is predicted that after 2010, industry and food production will decrease rapidly, and after 2030, the population will decrease very rapidly and fall to four billion people. It is predicted that the interactions of the relevant variables will collapse the ecological system (Meadows et al., 1972).

As long as the predicted trends continue and cannot be changed, sudden and uncontrollable decreases in population and production capacity will be encountered, and the limits of growth will be reached. However, it is possible to establish an ecological and economic balance by controlling growth. With this balance, it can be ensured that every individual in the world has equal opportunities to meet their basic needs and develop their human potential. The sooner and faster work is started for this, the higher the chances of humanity and the planet will be (Meadows et al., 1972).

Another important work that draws attention to the ecological disasters caused by capitalism and the growth problem in the 1970s is Ernst Friedrich Schumacher’s Small is Beautiful. Schumacher (1973) criticizes neoclassical economics for not realizing or being unwilling to recognize the importance of ecological capital. The nonrenewable capital that the planet offers us is huge, but not unlimited. Therefore, it is necessary to abandon the understanding of growth and develop a new productionconsumption order.

With “The Limits to Growth” report, Georgescu-Roegen’s studies based on entropy, and Schumacher’s book Small is Beautiful, the foundations of a new concept of shrinkage were laid to prevent the disaster that awaits the planet.

The cold shower effect created by “The Limits to Growth” report has diminished with the overcoming of the oil crisis and the rise of neoliberalism. The “Challenges of Degrowth” conference held in Montreal in 1982 was aimed at economic stagnation rather than degrowth (Turgut, 2014, p. 147). At the World Environment Summit held in Rio in 1992, “The Limits to Growth” report was updated and tried to emphasize the exceeded limits again. “The Limits to Growth 30 years Update” report, which was renewed in 2004, drew attention to the fact that there were 10 years left to the irreversible critical threshold. In the report, the only scenario where sustainability can be achieved is the scenario that coincides with the economic degrowth (Meadows et al., 2005). The report was last updated by climate strategist Jorgen Randers in 2012. The book 2052: A Global Forecast for the Next Forty Years emphasizes that the world is much less sustainable now and talks about the impossibility of capitalism to solve these problems.

The first steps of the degrowth movement were taken in Lyon, France, in the early 2000s, 30 years after “The Limits of Growth” report. The degrowth special issue of Silence magazine also attracted attention. Afterward, a symposium was organized with the participation of well-known degrowthers (or degrowth advocates) by the Economic and Social Studies Institute for Sustainable Reduction. To keep the world’s attention on the movement, Francois Schneider toured southern France by donkey. The first steps and ideas in France spread to Italy and Spain.

Founded in 2007, the Research and Degrowth organization sought to increase academic support by launching degrowth conferences. However, the First International Conference on Economic Degrowth for Ecological Sustainability and Social Equity held in Paris witnessed an important development for degrowth. At the conference, the word “degrowth” was used in English for the first time, and it was introduced into the academic literature. The importance of the use of the word in English is that the concept of degrowth is now open to international academic debate. At the conference, degrowth was defined as a voluntary transition to a just participatory and ecologically sustainable society (Degrowth Declaration of Paris Conference, 2008).

The first conference was followed by Barcelona in 2010, Venice in 2012, and Leipzig in 2014. At the conferences, the foundations of the degrowth movement were established, and public awareness began to rise. Publications on degrowth have increased, and the concept of degrowth has been placed in university curriculums. It is possible to talk about the positive effects of the COVID-19 epidemic, which we have experienced in the recent past and which has affected the whole world, on the degrowth movement. The closure of people in their homes has reduced the damage done to nature to a certain extent. It has also made it clear that the planet is trying to heal its wounds if given the opportunity. Studies show that when we choose to degrowth in a planned way, we can achieve a better life by working less and consuming less but with higher quality, less waste, and more recycling.

4

Degrowth (Decroissance, Decrescita, Decreixement, Decrecimiento)

The concept and idea of degrowth were first encountered in the works of Andre Gorz and Nicholas Georgescu-Roegen in the 1970s (Whitehead, 2013, p. 141). Georgescu-Roegen (1971) reminded that, like every human being, the planet Earth will eventually die and that this is an unchanging law of physics. But the real question is how fast and soon that will happen. Andre Gorz (1972) also asked whether it was possible to balance the planet in the current capitalist system. For this, he states that material production should not grow or even shrink (Kallis et al., 2014).

Kerschner (2010) defines degrowth as “.. .an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term” (Kerschner, 2010, p. 544).

Degrowth is voluntarily trying to build a better society and a new postdevelopment model within ecological limits. Although there is a definition of degrowth that is used by everyone, those who advocate degrowth state that there should not be a definite definition. The important thing is to focus on the goals of the movement, not the definition (Cosme et al., 2017, p. 323). Degrowth is a constantly changing and developing concept that cannot be placed in a single category, both intellectually and in terms of the actions of its followers (Koyuncu & Ozer, 2017, p. 176).

Degrowth is a movement that opposes traditional growth economics because growth in developed countries is socially damaging, ecologically unsustainable, and uneconomical (Alexander, 2012). Degrowth, as a critique of the developmental hegemony, opposes Western uniform development proposals, green growth, or green development approaches (Demaria et al., 2013, p. 193). Degrowth is a political, economic, and social movement based on environmentalist, anticonsumerist, and anti-capitalist ideas, the symbol of which is the snail.

Degrowth is not synonymous of negative growth or stagnation, nor is a goal in itself. Although the degrowth includes reductions in resource-intensive production and consumption activities and a decrease in GDP, it is not a recession. Even if GDP decreases with degrowth, there will be positive qualitative, social, and environmental changes that we cannot use in the measurement of GDP (Schneider et al., 2010). As a matter of fact, Easterlin paradox states that there is not as strong a relationship between GDP and happiness as expected (Easterlin, 1974). For psychological welfare, relative income level is important, not absolute income. Although absolute income can increase happiness up to a certain level, financial gains do not make people happy after a point. What increases social welfare is not economic growth, but equality. Degrowth, which suggests voluntary simplicity and less consumption, also underlines this point.

Degrowth is not an argument against technology and knowledge. On the contrary, it expresses a more technological and information-intensive situation. With degrowth, we need to understand that technological innovation and productivity gains do not encourage more consumption and production.

Degrowth has emerged as a response to the triple crisis, environmental, social, and economic. Degrowthers come from different fields and movements of thought. Anthropologist Serge Latouche can be cited as the first source of degrowth. Latouche contributes to degrowth by criticizing the idea that Southern countries follow the growth development model of the rich North. The second source of degrowth is the desire to break the link between democracy, politics, technological system, education and information system, and short-term interests. The third source is ecological. Degrowth includes respect for nature and all living things in it. The fourth source is movements that embrace nonviolence, art, and voluntary simplicity. The final resource is the bioeconomy or ecological economy (Schneider et al., 2010).

The word degrowth is criticized by many economists because it is provocative. However, degrowth is a concept that covers many political, economic, and sociological problems. Degrowth is a step taken by academics who question the social, economic, and ecological crises of the dominant economic view. The degrowth movement seeks to deliberately downsize economies to create a life of greater social welfare by addressing climate change and working less.

Mainstream economics thinks that when limited resources are exhausted, science will solve this problem with alternative resources. But degrowthers agree that science and technology cannot solve this problem. Contrary to the growthist approaches of the mainstream economics, a policy call is made in which higher welfare, better ecological conditions, and a fair world can be created through a planned economic contraction.

Bilancini and D’Alessandro (2012) argue that it is possible to transit from suboptimal balanced growth to happy degrowth that increases welfare. Under reasonable parameters, downscaling of production, reduction of private consumption, and increase in leisure and welfare are necessary for an optimal balance. By increasing leisure time and strengthening social ties, positive dissemination of leisure time can be achieved. With the benefit obtained from this, the decrease in the benefit caused by less consumption is compensated, and even more benefits can be achieved.

As individuals adapt to the material improvements in their lives after a short time, the level of satisfaction they feel decreases over time. For the level of satisfaction to rise again, the individual must earn more income. However, when the income level rises, the same vicious circle will restart. This vicious circle shows that growth will never be enough. Income level and financial standards are at the forefront of the happiness of individuals. However, after a certain point where our basic needs are met, material gains do not increase our sense of satisfaction as much as expected. As a matter of fact, equality and simplicity are at the forefront in the degrowth movement, which states that social welfare can be increased with equality (Wilkinson & Pickett, 2009).

The degrowth movement emphasizes the need to adapt human well-being to the planet. Right here, it is important to mention five basic strategies generally accepted by degrowthers. The first strategy is to use alternative indicators instead of GDP to measure welfare. As long as development and welfare are measured by traditional GDP, it is not possible to give up growth. GDP is a variable that has no normative aspects, cannot distinguish between good and bad, and cannot show ecological- social costs. It also does not cover other important indicators such as equality in income distribution, women’s labor, gender equality, education, and clean air, which are important for the degrowth movement. Therefore, degrowthers recommend using indicators that include ecological boundaries and equity. The United Nations’ Human Development Index (HDI), which includes variables such as income, life expectancy, education, and inequality, is a recommended indicator. Another recommended indicator is the genuine progress indicator (GPI). GPI is a variable that includes all environmental and social factors that are not included in GDP.

The second key strategy is to identify sectors that are important for welfare. The growth of all sectors in the economy is not rational. As Georgescu-Roegen stated, an increase in resource and energy use rises entropy and brings our ecological disaster closer. Therefore, it is recommended to establish a democratic order in which it can be decided which sectors should be allowed to grow and which should be reduced. By making a voluntary reduction in production and consumption, the growth of sectors that harm the environment can be stopped or slowed down. On the contrary, the growth of sectors such as education, health, and renewable energy can be accelerated.

The third strategy is the redistribution of income and wealth. The mainstream economic theory proposes to increase global GDP to eradicate poverty. Supply-side economics approaches, especially after 1980, tried to increase the wealth of the rich to stimulate growth. Increases in the wealth of the riches would transform into more spending and productive investments, which would trickle down to the rest of society. This is called the trickle-down effect (Hickel, 2017). However, studies present that GDP growth does not benefit the poor. The benefits of growth are unevenly distributed. Degrowthers state that the resources on Earth will be enough for everyone to create a better life. They also underline the need for redistribution of income and wealth both within and between countries. To ensure redistribution, a progressive taxation system, in which high income and wealth are taxed more, is recommended. Unconditionally universal basic income application for every household individual in the country is another recommended method. To ensure equality and justice, those living in rich countries must learn to live with less property (Foster, 2011).

Reducing the environmental impacts of human activities is the fourth strategy. It is important to ensure the sustainability of the planet’s limited resources and to minimize the damage done to the planet. It is necessary to protect biodiversity, reduce unnecessary consumption, and ensure a sustainable local food production.

The final strategy is to build a democratic and egalitarian society. The degrowth movement defends that all decision-making processes should be transparent and attended by all segments of society. People, and especially marginalized sections of society, should have a say in all decisions that affect their lives.

As a result, the degrowth movement seeks to provide a better life for all living things on the planet. It suggests enjoying life, increasing the well-being of all, voluntary simplicity, and slowing down. For this, the production and consumption frenzy of the Global North must be abandoned. The Global South needs to get rid of its former colonial connections and create a unique social and economic model. Both technical developments and social transformations are important to strengthen political participation and democracies, create localized economies, and solve ecological problems.

According to Latouche (2009), as long as the growth paradigm is adhered to, all productivity-enhancing activities we have done will increase consumption and production rather than decrease them. Making vehicles with lower emissions will lead people to drive more. Alternative energy sources will make people consume more energy. New and efficient technologies will lead to more consumption. The important thing here is to defeat the dictates of capitalism. Otherwise, what is done will not change the result. However, it should not be forgotten that productivity increases are also an important source for spending quality time by working less instead of producing more.

On the other hand, growth-oriented economic systems have intense psychological effects. Individuals who always want more and have to focus on the upper level are under intense stress. Long working hours, sleep disturbance, depression, and fatigue are the main indicators. Indeed, the use of antidepressants is increasing very rapidly. Degrowth seems to be a good solution to these problems with fewer working hours, slower, enjoyable, and quality living.

Andre Gorz states that as pollution on the planet increases, production will become more expensive and luxurious. In this case, it will be possible for only the rich and privileged to consume goods that have become more expensive. This will further increase inequality in society. Getting more scarcity of resources will make capitalism more brutal and increase the rent of resources even more (Giindogan, 2012).

Latouche underlines that if we do not reverse the situation, we will be condemned first to a controlled diet and then to a forced starvation. He finds activities such as advertising, tourism, transportation, automobile, agricultural industry (agribusiness), and biotechnology unnecessary. It is necessary to reduce or eliminate these unnecessary needs as much as possible by changing our lifestyle (Latouche, 2009, p. 79). Indeed, even the mainstream Financial Times portrays tourism as the world’s number one environmental enemy (Latouche, 2009, p. 38). It is necessary to make serious changes in subjects such as people’s consumption habits and transportation of goods. To reduce emissions during the transport of goods, it is important to produce and consume local products. However, these changes cannot occur spontaneously in a free market economy.

Decreases in growth rates in capitalist systems increase unemployment, disrupt equality of income distribution, and create problems in social, health, and education services. With degrowth, the problems that capitalist systems will face will be much more serious. Working less and consuming fewer goods and services will negatively affect people’s standard of living. To compensate for it, it is recommended to increase public services. The fact that people do not have to spend money in areas such as health, housing, education, and transportation will lead to less work and will be able to compensate for the negative effects of degrowth. Cuba is a good example of this. Cuba is an indication that growth is not needed to make basic public services accessible to all. Although the Cuban economy is shrinking, it can provide quality health and education services to all citizens.

Latouche (2006) states that the main problem that prevents people from transitioning to a better society and compresses them into a narrow framework is capitalism. Ecologically compatible capitalism, while theoretically possible, is practically impossible. Latouche argues that radical change is necessary if we are to avoid a cruel and tragic catastrophe.

The targets put forward by the degrowth are the targets that cannot be realized in the current capitalist system. Nevertheless, degrowthers do not want to be imposed by an intellectual or political authority to implement the principles that they defend. Instead, it will be much more effective to achieve constitutional transformation with a bottom-up popular movement like Buen Vivir (Turgut, 2014, p. 154).

There are many criticisms and questions to be answered against the degrowth movement. The first criticism is that there is no clear explanation of what will be downsized. There are also criticisms about how the proposals for reducing production and consumption differ from the steady-state economy. Although the degrowth movement has drawn a general strategy with its ideas, projects, and policies, it is criticized that it does not have a clear scenario on how and by whom this will be done. It is also argued that degrowth is not politically feasible (Romano, 2012, p. 588).

How to create jobs without economic growth is another area of criticism. Degrowthers argue that in an economy where everyone works fewer hours, full employment is possible. They think that this problem will be solved by reducing working hours and sharing work. However, there is a critical balance between hourly divisions of labor between sectors in the economy, energy consumption, and production. Although it seems good to use fewer resources and energy, it does not seem possible to maintain the current order with fewer working hours. The low net energy production of alternative energy sources is already an important obstacle to reducing working hours (§orman, 2012, p. 29-30).

To reach a fair, equal, free society with an increased quality of life that is desired to be achieved with degrowth, each society must take into account its dynamics and make good planning. However, cultural and social differences, uncertainties, insensitivity, lack of tolerance, and ignorance will create significant challenges that must be overcome.

Reducing energy consumption in some areas with degrowth will increase energy consumption in other areas. Increasing efficiency in energy and resource use will lead to more economic growth rather than less resource use. This situation is called the devoirs paradox. As more production will be made with more efficient machines and factories, resource usage will increase.

Another criticism suggests that degrowth may be an ideology rather than a practical way of life. Degrowth will not reduce carbon emissions to zero. A 10% reduction will only reduce carbon emissions by 10%. But degrowth of this rate will reveal a situation twice as bad as the Great Depression. The downsizing of the economy will affect the people who need energy and food the most.

How global inflation will develop after the universal basic income application and how people’s production and consumption demands will be affected by this are also important problems. Degrowthers’ suggestions for shortening working hours and applying basic income are not realistic within the capitalist system. In this respect, it is criticized by stating that the degrowth movement does not have a macro- integrative strategy and only looks at ecological problems. While examining the social consequences of the ecological crisis, degrowthists are also accused of not considering how the lower-income groups are affected (Koyuncu & Ozer, 2017, p.8).

5

Conclusion

Degrowth, drawing attention to climate change, speaks of a life with less consumption and production, less work, and high social welfare. It draws attention to the need to reduce the effects of human beings on the planet to a sustainable level. Degrowth argues that it is possible to redistribute income and wealth to a more just, sharing, participatory, and happy society.

A fairer, more sharing, and more enjoyable life can turn the world into a paradise for all people. The accessibility of the said world depends on human behavior. Be it mainstream economics or other views, they all talk about self-interested people. On our planet, where rational man is only in books, maximization behavior based on animal motives is ubiquitous. Humans want the most of everything in their limited lives and planet. While doing this, they do not care much about the situation of other people, just as they do not care about the resources and future of the planet. But what is overlooked here is that human existence depends on the health of the planet. The world existed before we were on it. It will continue to exist even when we are gone.

Studies show that our planet reboots itself. The planet warms, and the climate deteriorates and then enters an ice age. Then the same process happens again, just like the cyclical fluctuations of GDP, which mainstream economics attaches great importance to. The planet is renewing itself in this process that takes thousands of years. Fortunately, mankind has not yet witnessed this renewal process. However, if we continue to go full steam ahead in production and consumption, as degrowthers fear, we will be more likely to witness the beginning of the renewal process. With our current technology, is there any chance of us getting out of this process unscathed? Degrowthers, who have been criticized in many ways, try to answer this question before they reach the point of no return. What matters to those on the planet is not whether this answer is right or wrong; it will be the success of the degrowthers.

On the other hand, it should be stressed that the critiques made by the advocates of the degrowth movement point out important failures of capitalism. Although they strongly criticize the system, we may not suggest that the degrowth movement is an anti-capitalist movement. By offering some suggestions, they aim to fix the system. Since the history of the movement is relatively short, there are some debates on it. The socialists criticize the movement for not addressing the main points of exploitation of capitalism, while the advocates of free market criticize for ignoring the destructive consequences of the decrease in output. No doubt following the recommendations of the movement requires strong regulations made by national and international authorities, and it is not that easy. Yet another ambiguous point is the reactions of economic agents. It will be not that easy for households and companies to settle for less consumption and less profit rates, respectively. Thus, to estabfish a “new capitalism” based on the degrowth concept, microeconomic agents, national institutions, and international organizations should league together in a common acceptance.

### MMT Real---AT: Debt

#### The orthodox model of fiscal sustainability is totally wrong. It is fiscal surplus that is unsustainable because it drives up PRIVATE debt---this is the only kind that matters.

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Fiscal Sustainability

Those economists who lack an understanding of monetary sovereignty waste a great deal of time and energy on an issue they describe as ‘fiscal sustainability’. To a modern monetary theorist, fiscal sustainability requires the government to run fiscal deficits high enough to allow the non-government sector (the private sector and the rest of the world) to fulfil their net savings desires while total spending remains at the non-inflationary, full employment level. It is sustainable, because it does not require the private sector to go into debt, and to increase the fragility of the financial system, to maintain full employment. It is consistent with strong private balance sheets and strong financial regulation. It is fiscal surpluses which are unsustainable, in economies without trade surpluses, as they drive the private sector into debt, as was the case in Australia between 1996 and 2006. This is not what orthodox economists are referring to when they discuss fiscal sustainability, however.

The orthodox approach to fiscal sustainability ignores the distinction between a currency issuer and a currency user and so ignores the issue of monetary sovereignty entirely and treats the governments of modern-day Greece and Australia, for example, as though they operate under similar monetary systems. Greece, as everyone ought to be aware, is not a monetary sovereign nation, as it is in the Eurozone: Australia has a monetary sovereign government. Ignoring the distinction between them invalidates anything else you have to say about fiscal policy. The distinction is vital. It is why Greece, remaining within the euro, was not in a position to avoid a prolonged economic depression, following the shocks of 2008–2010. Its government, as a non-monetary sovereign, unsupported by a central bank, was at the mercy, firstly of the bond market and secondly of the European Central Bank, the International Monetary Fund and its fellow members of the Eurozone. Unemployment peaked at 27.5% in 2013, having been well below 10% during the 1980s and almost the whole of the 1990s. It remains above 20% in early 2018.

The orthodox approach is rooted in a misunderstanding of the nature of money, as stated in Chapters 1 and 2, and is consequently also, even now, infected by the money multiplier fallacy, as we shall see. When misleading people about fiscal policy, as they so often do, orthodox economists start by writing down what they wrongly call a government budget constraint. It is not a constraint at all, since we know a monetary sovereign government faces no purely financial constraint. It is an identity, and one which can equally well be used to illuminate the interaction between fiscal and monetary policy from a modern monetary theory perspective, as to refer misleadingly to constraints and policy sustainability from an orthodox one.

[EQUATION 5.1 OMITTED]

Gt is government spending in year t; Bt−1 is the value of government bonds (or, more correctly, debt securities) existing at the end of year t−1; rt is the average rate of interest on those government securities in year t; Tt is taxes collected during year t; ­Bt is the net increase in total bonds issued to the non-government sector (‘government borrowing’) across year t; and ­Ht represents any use of what is often called ‘seignorage’, or ‘printing money’ to increase the monetary base in the financial system. On the left-hand side, we have total government outlays, including the payment of interest to those who hold existing government securities. On the right-hand side, we have taxes, net bond issuance and the net issuance of currency and bank reserves. The equation is in no sense a constraint, because there is no upper limit to ­Ht, as central bankers have demonstrated, if it ever needed demonstrating, since 2008. However, it is an accounting identity.

If we move tax receipts over to the left-hand side of the identity, we have an expression for the fiscal deficit across the year, Ft.

[EQUATION 5.2 OMITTED]

A fiscal deficit can be accounted for through the issuance of government securities, or purely by crediting bank reserve accounts through the use of keystrokes. Given that every $1 the government spends is initially a keystroke operation, and bond issuance, when it happens, merely withdraws from the system funds which have previously been credited to bank reserve accounts, it makes sense to rearrange the equation a little more, and to put the increase in the monetary base on the left-hand side:

[EQUATION 5.3 OMITTED]

A fiscal deficit will increase bank reserves and the monetary base unless it is offset by the sale of additional government bonds to the non-government sector. Sales of bonds by the treasury in the primary market, or by the central bank, from its balance sheet, in the secondary market, can be used to drain excess reserves from the banking system. This is one way of preventing money market interest rates being driven down below the central bank’s target for the policy rate (called the federal funds rate in the USA, and a variety of other names in other countries). As we will see, it is by no means the only mechanism available to central banks in the management of interest rates.

#### Debt hawkishness is incoherent for monetary sovereigns. They literally never need to balance the budget.

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We have not yet dealt fully with the orthodox story of fiscal sustainability. Orthodox economists and commentators often talk of a growing government debt ‘burden’, and the supposed risk that the ratio of government debt to GDP, which is taken to be the most sensible measure of that burden, might rise explosively over time, leading to government insolvency, or if not that, inflationary ‘money printing’. Even using their own logic, they are being alarmist, when they write in these terms. The mathematics tells a somewhat different story.

In the following equation, deft is the primary deficit, or Gt − Tt, excluding interest payments, as a proportion of GDP across year t; rt is the average real rate of interest paid across the year on government debt; gt is the growth rate in real GDP; mt is the ratio of reserve creation (or the rate of increase in the monetary base due to fiscal policy) relative to GDP; and dt and dt−1 are the debt to GDP ratios at the beginning and end of year t.

[EQUATION 5.4 OMITTED]

If we exclude outright monetary financing, to humour orthodox economists, so that mt = 0, then the equation becomes

[EQUATION 5.5 OMITTED]

We can derive an expression for the level of the primary deficit which is consistent with a stable debt to GDP ratio, and so obviously non-explosive, by setting dt = dt−1. The result is

[EQUATION 5.6 OMITTED]

For example, given a debt to GDP ratio of 80%, GDP growth of 5% and a real interest rate on government debt of 3%, a government could continue to run a primary fiscal deficit of 1.6% of GDP, without any increase in the debt to GDP ratio over time. Interest payments on government debt would be steady at 2.4% of GDP, so that the overall fiscal deficit would remain under these circumstances at 4% of GDP. Despite there never being a fiscal surplus, the ratio of government debt to GDP would not rise over time.

The orthodox response to this arithmetic is to point out that it depends on the growth rate of real GDP being above the real rate of interest on government debt. This apparently implies a condition for an exploding debt to GDP ratio, of r > g. Firstly, it is important to remember that this is irrelevant for a monetary sovereign government, which doesn’t need to issue bonds in the first place and in the second place has a central bank which can intervene in the bond market to set r at any level it chooses, just as the Bank of Japan has been doing in 2016–2018. Secondly, it is oversimplistic, even when ignoring this. The condition r > g would imply an exploding debt to GDP ratio only if primary fiscal surpluses were ruled out by assumption. Otherwise, the primary fiscal surplus consistent with a stable debt to GDP ratio would simply be

[EQUATION 5.7 OMITTED]

As I have said though, for a monetary sovereign government, this is not a relevant issue. It is of possible relevance for non-monetary sovereigns, like the governments of individual Eurozone countries. However, in 2012, when the Eurozone was on the brink of collapse, even they were rescued from skyrocketing interest rates on their debt, simply as a result of the European Central Bank declaring itself willing to buy that debt on the secondary market.10 It was not even necessary for the ECB to follow through on this promise. Just the promise was enough. The yield to maturity on long-term Portuguese government bonds, which was above 10% before this commitment, fell towards 2% subsequently. Central bankers, remember, have limitless pockets. They cannot be dictated to by bond markets, even if they might sometimes pretend that the truth is otherwise.

Statements like the following one, which was written by a leading macroeconomist and founder of New Keynesian economics, who went on to become the Vice-Chairman of the Federal Reserve, look absurd, when you understand how monetary systems work. I cannot do otherwise than have an amazed reaction to Stanley Fischer having written this, in 1990, and to wonder whether he believes it still. It is plain wrong, for the most basic and fundamental of reasons.

‘At some point it will be impossible for the government to sell its debt, and the process will have to be brought to an end by cutting the budget deficit. The point at which the process has to end depends on the expectations of the public. When the public recognises the unsustainability of the government’s fiscal policy, it will cease buying government debt and thereby force a change in policy’.11

A monetary sovereign government does not need the public to buy its debt at all. Nobody can force a change in fiscal policy on such a government by threatening not to buy its debt securities, even if the government chooses to pretend otherwise. It does not have a compelling need to sell such securities in the first place. It does not need to get its currency from us. It cooperates with its central bank in the issuance of the currency. It cannot run out of its own currency, unless it chooses to do so. The central bank can set the interest rate, or yield, on long-term government securities, should it choose to do so. The decreasing yield to maturity on long-term Japanese government debt down the years, as gross government debt has gone from below 70% of GDP to a world record level of 250% of GDP, makes the point conclusively. The government with the most debt in the world, relative to the size of its economy, has an interest rate on its debt of approximately 0%.

All this is obvious, if you understand that official interest rates can be held permanently at zero, with fiscal policy used to manage total spending, and financial regulation used to limit and influence the direction of private credit creation. It remains true that the government does not need to issue debt, however, even if you wish to maintain positive default risk-free interest rates across the term structure. It simply requires the replacement of government debt securities with term deposits at the central bank. These are of course functionally identical liabilities for the consolidated government sector, but would be less likely to be seen as ‘government debt’ and more likely to be described as a form of broad ‘money’. This simple reform would do much to correct the misleading discourse generated by orthodox macroeconomists and commentators about government debt and so-called fiscal sustainability.

Orthodox economists can be divided up into fiscal doves—I have already talked of a doveish approach to ‘sound finance’—and fiscal hawks, just as they can be divided into various forms of neoclassical synthesis ‘Keynesians’ and various types of monetarists. Fiscal hawks believe governments should never run fiscal deficits, except perhaps in wartime, and recommend balanced budget legislation, or some similar limitations on the government’s fiscal space. They often cling to Barro-Ricardian equivalence, which we have already rejected as absurd. Their approach to fiscal policy is unwise, liable to be pro-cyclical, and eventually to have catastrophic consequences. Fiscal doves, on the other hand, believe governments should run deficits during and after economic downturns, but balance them out with surpluses during periods of strong growth. They often argue that the fiscal balance should be zero on average across the economic cycle, or at least that they should only borrow for investment purposes, like a business, and not for what is classified as government consumption. Their views are in conflict both with historical experience, as we have seen, and with the mathematics I have just gone through. What they say sounds plausible, but it makes no sense. They may do less damage than fiscal hawks, but they still have the wrong frame for thinking about fiscal policy.

Stephanie Kelton has chosen another bird for modern monetary theorists— labelling them fiscal owls. Owls are of course famously associated with wisdom. Moreover, they can find their way in the dark, and there has been a lot of darkness, as opposed to light, being thrown on the appropriate role for fiscal policy by orthodox economists, of both the hawk and the dove varieties. A deficit owl knows that the appropriate role for fiscal policy is not ever to ‘balance the budget’, but to balance the economy. There should be no target for the fiscal balance, other than for it to be at the correct level to allow for genuinely sustainable, equitable full employment. Sustainability here means taking into account real constraints and associated inflation risks, and ecological constraints, and in that sense the interests of future generations. The fiscal balance, taken out of context, cannot be interpreted as good or bad. There will be occasions when the deficit should be 3% of GDP, and occasions when it ought to be 10% of GDP.12 There will be occasions when it is appropriate to run a fiscal surplus. The fiscal balance should be what it needs to be to allow for non-inflationary full employment and sustainable prosperity. Both appropriate theory and historical data tell us that fiscal deficits are normal and usually necessary.

It is understandable that so many orthodox, and even some heterodox, economists, get the concept of fiscal sustainability so badly wrong. Their logic is based on the metaphor of the government as a household, and of course, it echoes the inescapable budgetary truths which apply to all decision-making units other than monetary sovereign governments. Every other economic unit faces a potentially binding intertemporal financial budget constraint, ignoring for the moment the option of bankruptcy. Every other economic unit must earn income, benefit from capital gains, run down assets or run up debts (or financial liabilities), in order to finance spending, where debts must be repaid in the future. Every other actor in the economy faces insolvency risk. Only currency issuers—monetary sovereigns—are immune to that risk.

Our normal, instinctive, system one approach is to imagine parallels between non-sovereign and sovereign budgets, and terms such as ‘budget deficit’ (which implies a shortfall or deficiency) and ‘government debt’ (which implies something burdensome, and in a sense immoral, which must be paid back) bias us to draw these inappropriate connections. It is unsurprising that politicians, journalists and even economists habitually interpret the term ‘surplus’ as something good, which is a sign of success akin to a company being in profit, and ‘deficit’ as something bad, and a sign of failure, like a corporate loss which could lead to insolvency.

However, such parallels are not valid, as we have seen. Current arrangements are a veil, hiding the truth regarding the fiscal space available to monetary sovereign governments, and mislead not only the community at large, but also, as suggested above, the majority of economists. This is vitally important, and contributing in a small way to changing this misperception was a large part of my motivation for writing this book in the first place.

#### The relevant issue is what it costs the economy---the answer is nothing

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Uncertainty in the scale of a job guarantee implies that assessments of the net fiscal impact of such a scheme are difficult to make with confidence. In any case, the fiscal ‘cost’ of such a scheme would be intended to expand and contract as necessary to offset fluctuations in the effective demand for labour within the remainder of the economy, and the true cost of any such scheme ought to be defined in terms of its net impact on real and ecological resources, and not in financial terms. However, financial projections are required in the effective framing of public policy proposals, and estimates of the purely financial cost of a job guarantee are therefore important. Fadhel Kaboub (2013) estimated the cost of a generous and extensive scheme in the USA, at a time of very high official unemployment, at less than 4% of GDP. Scott Fullwiler (2013) used an extensive open-economy stock-flow consistent econometric model to simulate a US job guarantee over time and show that the net effect on the fiscal deficit averages out at slightly less than 1% of GDP. These estimates are representative of other studies, including a recent report which has received a great deal of publicity in the USA, and provided support for a proposal for a job guarantee put forward by Senator Bernie Sanders (Wray et al. 2018).

That having been said, the net impact of a job guarantee on the fiscal balance is not the most significant issue. It is the real resources which are used, directly and indirectly, as a result of the scheme being in place which are relevant. Where these resources are labour resources which would otherwise have been unemployed, then in a sense a job guarantee would cost nothing at all. As Wendell Gordon8 puts it, ‘there is an important sense in which the job guarantee programme would not cost anything. The goods or services produced by the labour of the beneficiary of the job guarantee increase the gross national product and the national welfare by as much as the worker is paid as reliably as does any “free market” labour. The labourer is ‘earning’ the wage or salary received. Also, and importantly, the worker under the job guarantee programme has a job of which the worker can be as proud as are other citizens with their jobs’.

### MMT Real---AT: Hyperinflation

#### There is nothing special about printing money into financial system reserves that makes it hyperinflationary.

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Orthodox economists claim that significant increases in the monetary base, at least outside periods following financial crises, when banks are not lending and interest rates are close to zero, are inevitably inflationary (Fischer and Easterly 1990). Any such claim is logically dependent on the money multiplier theory of credit creation, which has long been rejected by every major central bank, and by everyone with any experience of dayto- day central banking, as being completely unrealistic and misleading. They also claim that what they call ‘money printing’ has regularly been the cause of periods of hyperinflation, and often refer to the infamous episodes in Germany in 1923 and Zimbabwe in 2008 in this context.

This is to confuse cause with effect. Hyperinflations are almost always caused by an initial collapse in aggregate supply, rather than by increases in demand, which are then accommodated, and in a sense fuelled, by increased government spending. The increased government spending happens in response to an acceleration in the price level, rather than being its initial cause. Under these circumstances, it is impossible to issue bonds quickly enough to limit increases in bank reserves, and so inevitably acceleration in the monetary base will be associated with a hyperinflationary episode. It was not, however, the cause of that episode. Spending beyond the productive capacity of an economy fuels inflation. Increases in a particular measure of the money supply will not do so, unless they are the cause of such spending.

If you believe that fiscal deficits cannot be allowed to add to the monetary base, because for some reason you think a rising monetary base is especially inflationary, then you might choose to set ­Ht = 0, so that Ft = ­Bt. This feeds into the myth that monetary sovereign governments are dependent on bond markets to allow them to finance net spending, and that such finance could potentially be withheld. It apparently contradicts the first axiom of modern monetary theory. It is highly misleading. It might be done innocently, but it is definitely fraudulent.

One way in which it misleads is by drawing an unjustified distinction between bank reserves held at the central bank (which are part of H) and government securities (B). Both are government liabilities, at least when the central bank is consolidated into the government sector. In recent years, central banks have started to pay interest on bank reserves, so they are both interest-bearing government liabilities, when viewed correctly. Since quantitative easing generally involves the exchange by a central bank of newly created bank reserves for existing government securities, it is no wonder that such an activity has little or no impact on total spending in the economy or on inflation. It is just an asset swap, and moreover a swap of two very similar assets. Government bonds are effectively just marketable time deposits at the central bank. Bank reserves are sight deposits at the central bank. There is no reason for government deficit spending to be any more inflationary when the resulting increase in bank reserves, and so in H, is not offset through sales of government bonds, than when bond issuance is used to drain those newly created reserves. Given the recent arrangements for maintaining official interest rates in most high income countries, which will be described below, increasing bank reserves does not even have any implications for official interest rates. It is much ado about virtually nothing.

### MMT Real---AT: Palley

#### Palley is wrong

John Smithin 16, York University, Toronto, Canada, “Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime: A Comment on Palley, Tymoigne and Wray,” Review of Political Economy, Volume 28, Number 1, 2016, pp. 64-78

[ELR = Employer of last resort]

In contrast to the attempted defense of neoclassical Keynesians and their concept of money financing versus debt financing, Palley (2015a, p. 5; 2015b, p. 51) is on much stronger ground in his critique of MMT for not providing a coherent macroeconomic model. He complains that:

MMT has no model…[that is, it]…has failed to provide a formal model that explicates [sic] its claims…. (g)iven this lack of formal modelling readers must fend for themselves.

This is surely fair comment. It is precisely the lack of a formal model that leads to very many of the misunderstandings and confusions that prevail in this literature, on both sides of the debate. It also seems to be the main reason why discussions of the various policy options suggested by MMT theorists have been so unfruitful and inconclusive. For the most part, there is simply no basis to discuss the likely effects of the various policy initiatives. Palley unmistakably raises this issue in the quote above, and is quite explicit about it elsewhere. Prominent among the policy proposals put forward by the MMT group are (i) anti-austerity fiscal policy (with which most Keynesians and Post Keynesians would agree); (ii) an employer of last resort (ELR) policy to guarantee full employment; (iii) a zero central bank policy rate of interest; and (iv) tighter financial regulation. However, quite clearly, in order to assess the effects of each of these in any serious way, it would be indeed be necessary to work their actual effects in the context of an explicit macroeconomic model. In their own words, if the central propositions of MMT theorists are true this simply provides ‘policy space’. It does not tell us what the policies should be.

On the other hand the absence of a detailed macroeconomic theory in MMT cannot, and does not, imply that the theory of the ‘old Keynesians’ is correct by default. Although not really offering any alternative, Tymoigne and Wray (2015, p. 40) were, quite rightly ‘surprised that Palley continues to promote a rather orthodox theory of the Phillips curve trade-off’. Palley (2015a, p. 11; 2015b, p. 53) does indeed strongly assert that ‘the issue of the Phillips curve is central to macroeconomics and policy’, and even predicts that if MMT theorists ‘ever produce a model…it will look a lot like the [Old Keynesian] framework…’. By now, the reader may well reasonably doubt whether either of these points has any basis. I do think that MMT theorists are correct to reject the notion of the Phillips curve, the supposed trade-off between inflation and unemployment, or unemployment and growth. However, it is also true that ‘you can’t beat something with nothing’.

Here is what I said about the dubious notion of the Phillips curve in an encyclopedia entry on the topic some years ago (Smithin 2002, pp. 584–585):

…any comprehensive theory of inflation and growth, should be able to explain equally convincingly, periods of high growth with high inflation, low growth with low inflation, low growth with high inflation, and high growth with high inflation. All of these have occurred in different times and different places.

These circumstances are what needs to be explained, rather than Phillips’s contrived exercise for a particular country (the UK), and a particular 91-year time period, 1867–1958 (for most of which Britain was participating in either the international gold standard 1873–1914, the restored gold standard 1925–1931, or the Bretton Woods system 1944–1973).

In Economics ‘101’, no one is surprised to learn that sometimes price increases are associated with an increase in output (when demand increases), and sometimes with a decrease in output (when supply falls). This just seems to be the logical consequence of microeconomic demand and supply analysis. However, all of this goes out of the window in later courses on macroeconomics. At the macroeconomic level, mainstream theory attempts to rule out such common-sense notions by an appeal to ‘natural rates’ of unemployment, output, growth and interest, and the insistence that employment and output are determined only on the supply side.

How has this situation come about? The reason is that a basic research strategy in economics, from Adam Smith onwards and still in every textbook, is to invoke a hypothetical world without money, which nonetheless has a fully-fledged market economy (the barter economy). The idea is promoted that even in an actual money-using economy researchers should look behind the ‘veil of money’ to the barter ratios presumed to reflect the underlying true preferences. The barter equilibrium, even though it exists only as a thought experiment, is traditionally regarded as the norm or ideal for the ‘optimal allocation of resources’. Never mind that there would be no trade in the first place until someone hit upon the notion of money. It is an article of faith in this approach that money itself is emergent from ‘market forces’ not the other way round, and, significantly, among the current disputants it seems that Palley (2015b, p. 60) alone accepts accept this view, as attested by references to ‘Bitcoin’, dollarization, scrip money, and so forth, in the appendix. Money is thought of primarily as a medium of exchange, a sort of substitute or standin for barter rather a means of payment (of debt). To the contrary, recently the anthropologist Graeber (2011), for example, drawing on more anthropologically, historically and sociologically informed authors such as Innes (1913, 1914), Wray (1998) himself and Ingham (2004), has written explicitly of the ‘myth of barter’.

Wicksell (1898, p. xxv), the acknowledged historical precursor (by almost exactly 100 years) of the modern ‘new consensus’ (Woodford 2003), was very much committed to the conventional view and wrote of the ‘natural rate of interest’ as follows:

This natural rate is roughly the same thing as the real interest of actual business. A more accurate, though rather abstract, criterion is obtained by thinking of it as the rate which would be determined by supply and demand if real capital were lent in kind without the intervention of money.

But, if barter is a myth, then the idea of a natural rate of interest must also be a myth. To put the point as straightforwardly as possible, how can there be ‘actual business’ without a money of account and credit creation? There cannot be. Furthermore, if the natural rate of interest is a myth then it seems to follow from economic theory itself (Kam 2005; Smithin 2003, 2009, 2013) that all cognates, such as the natural rate of unemployment, the natural rate of growth, the ‘NAIRU’,6 and even the very notion of ‘full employment’ as a threshold for inflation, are also myths. All the building blocks of Phillips curve analysis seem to be myths.

### MMT Real---AT: Phillips Curve

#### The Phillips Curve is wrong.

Seeking Alpha 17, hedge fund analyst and contributor to Seeking Alpha, “The Phillips Curve Is Dead: Why Lower 'Unemployment' No Longer Causes Inflation,” 5/18/17, https://seekingalpha.com/article/4074363-phillips-curve-dead-lower-unemployment-longer-causes-inflation

With that said, the unemployment rate merely correlates to how actual GDP might appear relative to potential GDP rather than standing as an ideal proxy.

For one, the unemployment rate has some methodological issues in the way in which its calculated that skews its reliability and ultimate value. It excludes large swaths of the potential labor pool, fails to take into account the number of hours worked, and ignores the quality of the employment itself and total factor productivity. All of these factors are important to take into account when assessing economic performance and matters in which this single metric can't capture.

The employment rate has been falling since 2010, yet no up-spurt has been observed in inflation. Inflation and inflation expectations rose from late-June 2016 through late-January but have been moving down since.

The patterns over the past three years have largely been driven by movement in the price of oil (a major input in economic activity) and, most recently, altered expectations on the fiscal policy front.

Over the past three years, the correlation between 10-year breakeven inflation and WTI crude oil prices has been +0.81 due to the volatile nature of the market. However, since January 2003, the correlation has come to just +0.13 (Source: Federal Reserve data).

The U-3 employment rate excludes discouraged workers, including those who want to work but for whatever reason can't find it whether it be personal-/family-related matters, skills mismatch, lack of compelling incentives, and so forth. The figure also counts those who work as little as one hour per week.

At its heart, the U-3 is a bureaucratically formulated metric largely designed to make political administrations look good. Even when the number is horrific, such as 10%, it still subtly suggests that nine out of ten people are productively employed, which is never the case.

Reliance on very broad and imprecise labor utility categorizations will correlate with the question policymakers are trying to answer ("How does current GDP relate to potential GDP?") but will fail to tell the whole story. The question of why ostensible labor market tightness has not translated to inflation in the way central bankers have anticipated in such economies as the US, EU, and Japan suggests that the metrics they're looking at may be fundamentally flawed. This has led to persistent cuts in the terminal overnight rate estimation from 4.25% in 2012 to just 3.00% today.

### No Biz Con---2AC

#### Business confidence is low now: inflation and bank failures.

Romero 23 – Dani, reporter at Yahoo Finance

Dani Romero, 4-11-2023, "Small business confidence drops as inflation weighs on outlook", Yahoo Finance, https://finance.yahoo.com/news/small-business-confidence-drops-as-inflation-weighs-on-outlook-151102617.html

Optimism among small business owners fell below a 49-year average in March as inflation, tighter credit conditions and difficulty finding workers weighed on outlook.

The National Federation of Independent Business' (NFIB) optimism index fell to 90.1 last month from 90.9 in February, the group said in a report Tuesday.

Stay ahead of the market

“Small business owners are cynical about future economic conditions,” NFIB Chief Economist Bill Dunkelberg wrote in the release. “Hiring plans fell to their lowest level since May 2020, but strong consumer spending has kept Main Street alive and supported strong labor demand.”

Inflation remained the single most important issue impacting small businesses, with 24% of business owners flagging this as the biggest operational problem facing their companies.

Meanwhile, labor was the second-biggest problem for small businesses, with 43% of all owners reporting that job openings were difficult to fill, the NFIB’s survey showed.

The concern comes as new federal hiring data released Friday showed that the labor market continues to add jobs at a strong pace. Employers added 236,000 jobs in March while unemployment stayed low at 3.5%.

According to NFIB's monthly jobs report, a seasonally adjusted net 15% of owners are planning to add new jobs in the next three months. Still, about 26% of owners said they got few or no qualified applicants for their open positions.

About 59% of small business owners reported hiring or trying to hire in March, down one point from last month, according to the NFIB survey. Yet, elevated labor costs have become a burden to small business operators, with 11% reporting the concern.

Separately, a net 42% of small business owners said they raised compensation while about 22% plan to increase compensation in the next three months.

As inflation is costing small businesses money, a net 37% of owners said they raised their selling prices, the lowest since April 2021. But some owners expect higher sales volume to deteriorate to a net 15% amid economic uncertainty.

Still, more small businesses reported having greater difficulty getting a loan in March after multiple bank failures led to tightening credit conditions. A net 9% said their last loan was harder to get than the previous time, up 4 percentage points from the previous month.

“The March survey ought to capture at least some of the impact of the banking crisis on small business owners’ confidence, and it’s not pretty; the decline in the headline index reverses the modest gain since the start of the year, and leaves it 12.4 points below its recent peak in June 2021,” Ian Shepherdson, chief economist at Pantheon Macroeconomics, wrote following the release.

“Small businesses are captives of their banks, and the overnight change in the way markets view regional banks means they have been catapulted into survival and liquidity mode. Lending growth was slowing long before SVB failed, but the declines in the March NFIB measures of current and expected credit availability means we have to expect much weaker lending numbers over the next few months,” he added.

#### Business confidence is nonsesnse.

Michael Hiltzik 18, Los Angeles Times columnist Michael Hiltzik writes a daily blog appearing on latimes.com., “Column: What became of the 'uncertainty' meme? As Trumponomics get more unpredictable, U.S. Chamber stops complaining,” Los Angeles Times, 6-25-2018, https://www.latimes.com/business/hiltzik/la-fi-hiltzik-uncertainty-20180625-story.html

Used to be that you couldn’t open a business article without tripping over a complaint about “uncertainty.” The U.S. Chamber of Commerce never shut up about it. Economists, especially conservatives, pointed to it as the cause of our economic malaise.

That was during the Obama administration, when labor regulations, consumer protections in healthcare and finance and tax rates all were ramping up.

During the Trump administration, which has brought us a tax bill that has caused confusion and chaos, tariff policies that don’t correspond to trade realities, infrastructure proposals that don’t exist in real life, and random tweet-borne attacks on businesses that tick off the president, one would think that concerns over “uncertainty” would be soaring.

Yet one almost never hears the term anymore. The Chamber has almost entirely stopped grousing. Oh, it still cites “uncertainty” now and then, but with one exception we’ll get to in a moment, its complaints still focus on Obama-era regulations that it wants overturned.

This may say less about current economic conditions than about the fundamental dishonesty of the “uncertainty” meme during its recent heyday. The meme was never really about economic headwinds generated by lack of knowledge about government policy. It was a way of making partisan complaints about specific policies look like legitimate economic analysis.

The targeted policies fell into three specific categories: Taxes, which were supposedly too high; regulations (especially labor regulations), which were going to shift costs from workers to employers; and Obamacare, which was going to raise standards for health coverage, possibly at the expense of businesses.

None of these was especially uncertain. The Obama White House had made clear it was going to move ahead on all three fronts. The Chamber of Commerce undercut its own argument about taxes when it offered its members a form letter to send to their senators and representatives in November 2010, asserting that “a long term extension, preferably permanent, of all current tax rates would, in one bold stroke, boost investor, business, and consumer confidence by taking the uncertainty of tax policy off the table.”

Uncertainty could have cut both ways, obviously: If Congress passed a long-term, preferably permanent tax increase on businesses and top earners, that also would have taken the uncertainty of tax policy off the table. But the betting here is that the Chamber would have sent around a different form letter.

The day the Chamber’s letter went out, coincidentally, The Times published an economists’ roundtable on the U.S. economy. Two participants cited “uncertainty.”

“Looming healthcare, labor market regulation, and tax and regulatory uncertainty make it even harder for companies to hire,” conservative economist John Cochrane of the University of Chicago said. “Congress has not even started debating what taxes will be Jan. 1. How can anyone plan?”

Ayse Imrohoroglu of USC seconded his motion: “Companies have held on to their profits rather than using them to hire additional workers or add productive capacity… because of all the uncertainty they face in the marketplace,” she wrote. “Businesses don’t know what will happen to interest rates. They have trouble calculating what new workers will cost in light of potential new healthcare mandates and costs. They don’t know what will happen to tax rates, which could rise dramatically.”

Some of the talk of “uncertainty” cited an “economic uncertainty index” conceived by economists Scott R. Baker, Nick Bloom and Steven J. Davis of Northwestern, Stanford, and the University of Chicago (respectively). The index was based on the level of disagreement among economic prognosticators, the number of tax provisions scheduled to expire in the near term, and the trend of mentions of “uncertainty” in leading newspapers, including The Times.

The index tends to rise during presidential election campaigns, as perhaps it should. But what it has shown is that as an objective measure, “uncertainty” was generally lower during the Obama administration, especially in its last two years, than under Trump. Earlier in the Obama era it was higher, but that was probably a hangover from the Great Recession, which began under George W. Bush and continued into the Obama’s first term.

Chart, line chart, histogram

Description automatically generated

Whether the index is truly useful as an economic trend spotter remains questionable. A few critics noticed the self-referential aspect of the uncertainty index in 2012, when rhetoric about the advent of the Affordable Care Act and tax increases causing “uncertainty” was peaking. Among them was Mike Konczal of the Roosevelt Institute.

“Spokespeople for the conservative movement tell reporters that President Obama’s policies are causing economic uncertainty,” Konczal wrote. “Reporters write it down… Economic researchers search newspapers for stories about economic uncertainty and policy, and create a policy uncertainty index out of those talking points. The conservative movement then turns around and points to the policy uncertainty index as scientifically justifying their initial talking points about Obama and uncertainty...Taa-daa! Magic.”

Others have pointed to the sheer fatuousness of business leaders complaining about uncertainty, as though the future is ever anything but — no one knows what interest rates will be in the near, middle or far future, and tax rates are always subject to congressional tweaking, after all.

Chart

Description automatically generated

Indeed, the “uncertainty” claim has been trotted out as an excuse for business underperformance for so long that the conservative economist Joseph Schumpeter dismissed it out of hand — in 1939. Schumpeter had no use for the idea that federal regulation, taxation and deficit spending unnerved business to the point of paralysis. He pointed to the argument as one of those that “fully merit the shrugging of shoulders with which they are usually met.”

So where are we today, in 2018? On the surface, one couldn’t conceive of a more uncertain economic environment. To call Trump’s policymaking “mercurial” would be laughably charitable. He demands legislation on immigration, then blows up the immigration bills proposed in Congress by his fellow Republicans. He strikes a budget deal, then demands more cuts. His determined gutting of the Affordable Care Act threw the healthcare marketplaces into chaos just at the moment that they were beginning to stabilize, costing the economy billions of dollars.

Then there’s trade. Interestingly, this is the only policy on which the Chamber of Commerce has criticized Trump for injecting uncertainty into the business landscape, possibly because it hits so many Chamber members where they live.

### No Biz Con---Not Key

#### Not all uncertainty is the same. Policy uncertainty only matters if it results in negative growth expectations, which depends on real-world outcomes, NOT perceptions.

Matthew O'Brien 12, former senior associate editor at The Atlantic, “It's the Economy, Not the Uncertainty, Stupid,” Atlantic, 8-9-2012, https://www.theatlantic.com/business/archive/2012/08/its-the-economy-not-the-uncertainty-stupid/260844/

There's one certainty about the economy. Uncertainty is bad for it.

Actually, there's another certainty about the economy. Uncertainty never goes away. Sometimes we forget this; then we belatedly remember it. This alternating cycle of optimism and pessimism is what Keynes famously called "animal spirits" -- in other words, the psychological drama that drives our economic drama.

And it does drive the economy. Consider the chart below, which compares the inverted share of gross private investment in the economy with the unemployment rate. When investment goes up, unemployment goes down -- and when investment goes down, unemployment goes up. The correlation is particularly tight the past 20 years.

Chart, histogram

Description automatically generated

Why does investment drive the business cycle? Because sentiment can change so suddenly, and investment depends on sentiment. Of course, this is just another name for uncertainty -- or at least our awareness of it. When we finally do realize how hard predictions are -- especially about the future! -- everything changes. We worry more about the return of, rather than the return on, our money. Greg Ip of The Economist points out that an old Princeton professor named Ben Bernanke was very much mindful of the way investors hold off on making long-term commitments when the long-term looks hazy.

But not all uncertainty is created equal. There's uncertainty over how what the economy will do in the future, and there's uncertainty over what policymakers will do in the future. These are not, of course, mutually exclusive. It's this policy uncertainty that Mitt Romney's economic team says is to blame for our subpar recovery. In other words, questions about what will happen to the Bush tax cuts, financial reform rule-making, and the costs of healthcare reform are holding back business investment -- or so the story goes. All it needs is some evidence.

What would this evidence look like? Well, if policy uncertainty really is the culprit for low investment, we would expect our investment growth to lag that of other rich countries since the financial crisis ended. The below chart looks at how much investment as a share of GDP has grown from 2009 to 2011 for developed nations that were all hit fairly hard by the recession.

Chart, bar chart

Description automatically generated

This is what meh looks like. But there's a lot of meh to go around. Even if you look at the change from 2007 to 2011 -- which is a far less flattering picture for us -- we're still doing just about as well or better than the United Kingdom, New Zealand, Denmark, the Czech Republic and the Slovak Republic. And none of them face a fiscal cliff next year. Or recently revamped their healthcare systems. Or passed new financial regulations.

In other words, our slow investment is mostly a story about uncertainty over the economy, not uncertainty over policy. Just like everywhere else.

That hasn't stopped the Romney camp from insisting otherwise. Exhibit A in their case is a paper by Steven Davis of the University of Chicago and Nicholas Bloom and Scott Davis of Stanford that claims uncertainty hurt GDP by 1.4 percentage points in 2011. That sounds bad, but if you actually read the paper you'll see that the biggest effects came from the debt ceiling showdown and the euro crisis, not tax or regulatory uncertainty. You'll also see that the paper's methodology is seriously flawed -- it registers political talking points about uncertainty as evidence of uncertainty -- as Mike Konczal of the Roosevelt Institute pointed out.

Okay, there might be one last certainty about the economy. Uncertainty is principally a question about how bad the economy will be. This can feed on itself in a self-fulfilling cycle of doubt -- and that makes policy both more important and more uncertain. In other words, economic uncertainty often spawns policy uncertainty. But the fundamental issue, as Dylan Matthews of the Washington Post explains, is still the bad economy.

#### Not key to growth

Cameron Bagrie 18, Managing Director of Bagrie Economics, “Business confidence is a hopeless indicator. But that doesn't mean the economy isn't in trouble,” Spinoff, 8-9-2018, https://thespinoff.co.nz/business/09-08-2018/business-confidence-is-bullshit-but-that-doesnt-mean-the-economy-isnt-in-trouble/

The good news is that business confidence is hopeless as an economic indicator. The correlation with economic growth is poor and I largely ignore business confidence readings. Changes in direction can provide some insightful information – whether things are picking up or slowing down, but not the levels.

Businesses tend to be more upbeat regarding general confidence about the economy under a blue flag as opposed to a red one. Business confidence averaged minus 18 between 2000 and 2007. The economy (measured by real gross domestic product) grew on average by more than 3.5% per year. Yep, confidence was negative, but growth was positive. So, we ignore business confidence as an economic indicator. This is nothing new. It’s surprising headline business confidence figures receive so much attention.

#### Business confidence has literally zero relationship with growth.

Henry **Cooke 18**, chief political reporter at NZ Stuff, "Fact check: Business confidence surveys have little to do with actual economy." Stuff, 4/11/2018, https://www.stuff.co.nz/business/103016504/fact-check-business-confidence-surveys-have-little-to-do-with-actual-economy

Journalists love a series of comparable numbers, but politicians love them even more. National's Finance Spokeswoman Amy Adams told the House the numbers were falling because the Government was "shooting from the hip" and had " zero ideas, zero competence, and seems to have no plan of where it's going".

It's unsurprising these numbers become political football. But even ANZ admit that the headline business confidence figures don't actually correlate very strongly to GDP, a much firmer measure of how the economy is actually doing. In their March release they noted that "Firms' views of their own activity (which has the stronger correlation with GDP growth), lifted from +20 to +22."

Former Reserve Bank economist Rodney Dickens of Strategic Risks Analysis believes the survey has a major political bias. Basically business leaders are likely National Party supporters and this view biases them against the new Government more than any actual concrete business risk.

Chart, scatter chart

Description automatically generated

Luckily, ANZ has been running this survey for decades so we can compare actual confidence with GDP quite well. Dickens' analysis (above) shows that since 2002 the business confidence survey had just 0.2 correlation with actual annualised GDP growth in the quarter. Basically the businesses got it right just 20 per cent of the time.

"It provided really negative readings for periods that would usually be consistent with the economy being in recession when the economy was actually growing robustly," Dickens said.

This big change happened after the 2002 election brought in some major changes from the Labour government the business community didn't like, Dickens said.

"The survey became totally useless as an indicator of economics and was swamped by political bias."

#### Businesses are numb---won’t overreact to the plan.

Greg **Ip 17**, Chief Economics Commentator, The Wall Street Journal, “Comfortably Numb: Why the U.S. Economy Shrugs Off Politics,” 9-6-17, ProQuest

Just how much political risk can the U.S. economy tolerate? Quite a bit, it seems.

The federal government could shut down in a few weeks for lack of a budget. It could default on its obligations if the debt ceiling isn't raised . Trade treaties with Mexico, Canada and Korea may be torn up.

North Korea has tested an apparent H-bomb and threatened to use it. And overseeing these challenges is an unpredictable and often-divisive president with associates embroiled in an investigation over ties to Russia.

Yet economic growth has remained largely unperturbed and, judging by the latest gross domestic product numbers , may have even accelerated ahead of two major hurricanes. Stock prices remain near record highs.

The reason for the dichotomy is that the impact of political risk depends on the risk. Government shutdowns, protectionism, presidential scandals, even conventional wars have happened before and are thus knowable and sometimes quantifiable to businesses, consumers and investors.

Federal default or nuclear war fall in the category of unprecedented and unthinkable. Faced with such risks, the usual reaction is to assume they won't happen. Yet that assumption becomes a risk in itself: It alleviates the pressure to prepare for either and multiplies the damage if they do occur.

The outbreak of the global financial crisis a decade ago ushered in an era of elevated political risk, as illustrated by an index compiled by the academic economists Scott Baker, Nicholas Bloom and Steven Davis that tracks mentions of economic policy uncertainty in newspapers. The U.S. mortgage meltdown was soon followed by the European sovereign debt crisis, a showdown over the U.S. debt ceiling in 2011, Britain's vote to leave the European Union last year and the election of Donald Trump last fall.

Because political risk has been a constant, it has lost some of its shock value. Investors have in effect built that risk into their assumptions; their demand for safety is one reason government bond yields around the world are so low.

Since 2009, hedge funds as a group have positioned themselves for another meltdown like the subprime bust, says Jason Thomas, head of economic research at Carlyle Group, a private-equity manager. But "the same psychological factors that make 'next subprime' investment strategies seem more appealing," he says, have also led businesses to favor cash retention or share buybacks over capital expenditure, and policy makers to regulate more. That depresses growth but also makes the economy less vulnerable to sudden shifts in sentiment.

As a result, hedge fund performance has suffered from strategies designed to profit from a meltdown that has yet to happen . With bearish psychology already so prevalent, actual selloffs have been brief and the VIX, the market's so-called "fear gauge," which is based on derivatives prices, has been subdued.

Chart

Description automatically generated

Those who watch politics and policy for a living--a sizable contingent on Wall Street and in Washington--tend to overestimate how many ordinary people do the same, and thus how much their behavior will change because of politics. In market economies, the natural rhythm of the business cycle easily drowns out politics. Big policy actions such as rising trade barriers or reduced immigration do take their toll, as the latest British data suggest , but slowly, not in a spasm of panic selling and recession.

What would overwhelm these coping mechanisms? Something previously unfathomable, like nuclear war.

No atomic weapons have been used since the U.S. dropped them on Hiroshima and Nagasaki. The public assumes global leaders won't let it happen again. As Capital Economics notes in a recent report, the market barely sold off during the Cuban missile crisis in 1962, the closest the world has come to nuclear war since 1945.

A nuclear attack on a U.S. ally, city or electrical grid via electromagnetic pulse is so alien to a business's frame of reference that it can't be planned for. On earnings calls with investors in the past three quarters, big companies have mentioned tax policy 1,024 times, immigration issues 40 times, and North Korea just 14 times, according to Hamilton Place Strategies.

But North Korea may be a less rational actor than the Soviet Union was in 1962. Mr. Trump's willingness to go to war is also being underestimated, says Marc Sumerlin, a former economic aide to President George W. Bush who runs Evenflow Macro.

To say there's no military solution is to say Americans must accept living within missile range of a country whose leader may be unstable, he says: "That's not as easy a decision for someone who's taken an oath to defend the country as it is for someone sitting in a think tank."

As with nuclear war, the assumption the U.S. won't default is based on the fact that it hasn't done so since 1814, at least deliberately. It delayed payment on some Treasury bills in 1979 because of a technical glitch. Its refusal to repay some bonds in gold in 1933 also is considered by some a type of default.

The Fed and Treasury in 2011 drew up contingency plans if the debt ceiling wasn't raised to prioritize debt payments over other obligations such as Social Security benefits. Yet the deepening dysfunction of U.S. lawmaking means default by accident is a recurrent threat.

Political risk is part of a new normal. It takes its toll slowly and at the margin as decisions to hire or invest are deferred, rethought or resized. But until the unthinkable happens, don't expect it to tank the economy.

### No Biz Con---Not Key---AT: EPU Index

#### The EPU index measures conservative propaganda and the effect of recessions on confidence, not the other way around.

Mike Konczal 13, director at the Roosevelt Institute, where he focuses on economics, inequality, and the role of public power in a democracy, “The Economic Policy Uncertainty Index is Nonsense,” The Big Picture, 8/7/13, https://ritholtz.com/2013/08/the-economic-policy-uncertainty-index-is-nonsense/

Jim Tankersley has been doing the Lord’s work by following up on questionable arguments people have made about our current economic weakness being something other than a demand crisis. First, he asked Alberto Alesina about how all that expansionary austerity is working out from the vantage point of this year. Now he looks at the Economic Policy Uncertainty (EPU) index (Baker, Bloom, Davis) as it stands halfway into 2013.

And it has collapsed. The EPU index has been falling at rapid speeds, hitting 2008 levels. Yet the recovery doesn’t seem to be speeding up at all. Wasn’t that supposed to happen?

I’ve been meaning to revisit this index from when I looked at it last fall, and this is a good time to do so. It’s worth unpacking what actually drove the increase in EPU during the past five years, and understanding why there was little reason to believe it reflected uncertainty causing a weak economy. If anything, the relationship is clearly the other way around.

Let’s make sure we understand the uncertainty argument: the increase in EPU “slowed the recovery from the recession by leading businesses and households to postpone investment, hiring and consumption expenditure.” (To give you a sense, in 2011 the authors argued in editorials that this index showed that the NLRB, Obamacare and “harmful rhetorical attacks on business and millionaires” were the cause of prolongued economic weakness.)

As commenters pointed out, it would be easy to construct an index that gets the causation to be spurious or even go the other way. If weak growth could cause the Economic Policy Uncertainty index to skyrocket, then it’s not clear the narrative holds up as well. “There’s uncertainty over whether or not Congress and the Federal Reserve will aggressively fight the downturn” isn’t what the index is trying to measure, but that’s what it seems to be doing.

Let’s take a look at the graph of EPU. When most people discuss this, they argue that the peaks tell them the index is onto something, as it peaks during periods of major confusion (9/11, Lehman bankruptcy, debt ceiling showdown).

But what is worth noting, and what drives the results in a practical way, is the increase in the level during this time period. And that happens immediately in January 2009:

How does economic policy uncertainty jump the first day in 2009? The index has three parts. The first is a newspaper search of people using the phrase “economic policy uncertainty.” I discussed that last fall, arguing that it was mostly capturing Republican talking points and the discipline of the GOP machine rather than actual analysis.

The second is relevant here, and that’s the number of tax provisions set to expire in the near future. (In the first version of the paper this was total number of tax provisions, while in the current version it’s total dollar amount of those provisions.) It’s heavily discounted, so tax cuts that are expiring in a year or two are weighted at a much higher level than those that are further in the future.

What does this look like over the past few years?

So what happened starting in early 2009? The stimulus, of course. And the stimulus was in large part tax provisions that were set to expire in two years. This mechanically increased economic policy uncertainty, even though it was a policy response designed to boost automatic stabilizers. Also, the Bush tax cuts were approaching their endgame, and the algorithm gave a disproportionate weight to them as they entered their last two years.

Then, in late 2010, the Bush tax cuts and some tax provisions from the stimulus were extended to provide additional stimulus to the economy while it was still weak.

Here’s how the creators of the index describe this move: “Congress often decides whether to extend them at the last minute, undermining stability of and certainty about the future path of the tax code… Similarly, the 2010 Payroll Tax Cut was a large tax decrease initially set to expire in 1 year but was twice extended just weeks before its expiration.”

But this decision was not orthogonal to the state of the economy. A major reason the administration waited and then extended the Bush Tax Cuts and the payroll tax cut was the fact that the economy was still weak, and they wanted to boost demand. The only policy uncertainty here was how aggressive and successful the administration would be in securing additional stimulus, which itself was a function of the weakness of the economy. To retroactively argue that the government’s actions in securing additional demand were creating the crisis they are trying to fight requires an additional level of argument not present.

The third part of their index has the same issue. They draw on a literature (e.g. here) that uses disagreements (dispersion of predictions) among professional forecasters as a proxy for uncertainty — disagreements about the predicted growth in inflation, and predictions of both state and federal spending, one year in advance.

The problem comes from trying to push their definition of EPU onto these disagreements. Debates over how much the federal government will spend through stimulus, how rough the austerity will be at the state level, or how well Bernanke will be able to hit his inflation target, which drives this index, are really debates about the reaction to the crisis. The dispersion will increase if people can’t figure out how aggressively the state will respond to a major collapse in spending. But this is a function of a collapsing economy and how well the government responds to it, not the other way around.

This is why we should ultimately be careful with studies that take this index and plop it into, say, a Beveridge Curve analysis. As Tankersley notes, the government decided to fight a major downturn with stimulus, and the subsequent move away from stimulus before full employment hasn’t helped the economy. In other breaking news, if you carry an umbrella because it is raining, and then toss the umbrella, it doesn’t make it stop raining.

### No Biz Con---Not Key---AT: Stocks

#### The effect of biz con on stocks is extremely short-term.

Mohsen Bahmani-Oskooee & Sujata Saha 19, Bahmani-Oskooee is with The Center for Research on International Economics and Department of Economics, The University of Wisconsin-Milwaukee; Saha is with the Department of Economics, Wabash College, “On the Effects of Policy Uncertainty on Stock Prices,” Journal of Economics and Finance, vol. 43, no. 4, 10/01/2019, pp. 764–778

Introduction

One of the more important topics in financial economics is the identification of the determinants of stock prices. A recent review article by Bahmani-Oskooee and Saha (2015) identifies authors who have pointed at factors such as domestic production, interest rates, inflation rate, exchange rate, money supply, etc. as being the main determinants of stock prices in almost every country. Some examples of studies that have included these variables as determinants of stock prices and have tried to verify such inclusions and approaches, empirically, include Fama and French (1993), Granger et al. (2000), Anari and Kolari (2001), Nieh and Lee (2001), Smyth and Nandha (2003), Phylaktis and Ravazzolo (2005), Yau and Nieh (2006), Pan et al. (2007), Richards et al. (2009), Kutty (2010), Chortareas et al. (2011), Liu and Tu (2011), Lean et al. (2011), Kollias et al. (2012), Tsai (2012), Basher et al. (2012), Lin (2012), Tsagkanos and Siriopoulos (2013), Groenewold and Paterson (2013), Caporale et al. (2014), Yang et al. (2014), Boonyanam (2014), Moore and Wang (2014), and Bahmani-Oskooee and Saha (2016).

The above studies have been reviewed in detail by Bahmani-Oskooee and Saha (2015), and as the list of stock price determinants was examined, we have realized that none of the studies have included a measure of uncertainty as another determinant of stock prices. By following the U. S. stock market, we have observed that bad news pushes the prices down and good news pushes them up. The most notable adverse effect was due to the terrorist attack of September 11, 2001 when uncertainty generated by the attack had an abnormally negative impact on stock prices. However, we have seen that once the uncertainty subsides, the markets return back to normal and stock prices rise. Of course, during the period of recovery there are other factors that contribute to an uncertain trading environment. For example, when the U.S. government is not able to settle the federal budget and market participants expect a government shutdown, the market reacts negatively for a while.Footnote1 Other factors that contribute to an uncertain environment are wars, deficit spending, mounting national debt, political presidential debates, among others. Can we quantify all these uncertainty factors into a single measure over time so that we can assess its impact on stock prices?

Fortunately, the Policy Uncertainty Group provides a positive answer to the above question. In its attempt to construct a measure of uncertainty, the group constructs an index using three components. The first component involves collecting any policy-related uncertainty indicators. The second component includes tax code provisions that are to expire on a future date. These are said to contribute to an uncertain future. Finally, the last component uses disagreement among forecasters, again, as an indicator of uncertainty. The approach is adopted from Baker et al. (2016).Footnote2 In order to gain some insight into the path of the measure over time in countries that are included in this paper, we plot the measure in Fig. 1.Footnote3

[FIGURE 1 OMITTED]

The main purpose of this paper is to investigate the impact of policy uncertainty on stock prices. We include all the countries for which we are able to collect data on relevant variables. To that end, in Section II we present a model which includes the policy uncertainty measure as another determinant of stock prices, and discuss the methodology. The results are presented in Section III with a summary in Section IV. Finally, data definitions and sources are cited in an Appendix.

The model and methodology

The easiest way to assess the impact of policy uncertainty on stock prices is to borrow a model of stock price determination from the literature and add our new variable as an additional determinant. As such, we follow Boonyanam (2014) and Moore and Wang (2014) and adopt their specification with the addition of the measure of policy uncertainty as follows



where SP denotes the stock prices, EX is the nominal effective exchange rate, IPI is a measure of output proxied by the Index of Industrial Production (IPI), CPI is the Consumer Price Index as a measure of the price level, M2 is a measure of nominal money supply, and finally PU is our newly introduced variable as a measure of policy uncertainty. As for the expected sign of coefficient estimates, an estimate of b could be negative or positive depending on whether firms associated with the specific stock are export- or import-oriented. Clearly, a depreciation that boosts exports of an export-oriented firm will also boost that firm’s profit and eventually its stock price. On the other hand, a depreciation could raise the cost of imports and reduce the profit of an import-dependent firm, and thus its stock price as well. An estimate of c is expected to be positive since an increase in economic activity is expected to boost stock prices. Note that since monthly data will be used to carry out the empirical exercise, IPI is used rather than real GDP, since the latter measure is not available in a monthly frequency.

As for the expected sign of d or the impact of an increase in CPI (or inflation) on stock prices, it could be negative or positive. Fama (1981) and Chen et al. (1986) have argued that usually, inflation leads to an increase in input prices and lower profits, eventually lowering stock prices. On the other hand, Anari and Kolari (2001) have argued that while in the short run there is a negative correlation between stock prices and inflation, this relation could be positive in the long run. When stocks are held over longer time horizons, they are considered or expected to be a good inflation hedge, and thus a positive relationship between inflation and stock prices is feasible. This is empirically supported by Boonyanam (2014). An estimate of e is also expected to be positive or negative. An increase in money supply leads to lower interest rates and higher investment and economic growth; economic growth eventually boosts stock prices. However, Fama (1981) argued that if an increase in money supply causes inflation, it could hurt stock prices. Finally, an increase in uncertainty is expected to make market participants uneasy and induce them to react, which will lead to a decline in stock prices.

An estimate of eq. (1) by any method will yield only the long-run effects of exogenous variables on stock prices. In order to distinguish the short-run from the long-run effects, we must re-write (1) as an error-correction model. In doing so we follow Pesaran et al.’s (2001) ARDL bounds testing approach for a few reasons that will be discussed below. Their approach applied to (1) results in the following specification:

Graphical user interface, Word

Description automatically generated

The error-correction model (2) follows Engle and Granger (1987) representation theorem in spirit. The only difference is that rather than including the εt-1 in (2), the linear combination of lagged level variables is included. By reference to (1) and by deduction they are the same.Footnote4 Once (2) is estimated by OLS, short-run effects of each variable are inferred by the estimates of the coefficients attached to the first-differenced variables. Their long-run effects are judged by the estimates of λ2 - λ6 normalized on λ1.Footnote5 However, for the long-run effects to be valid and not spurious, we must establish cointegration among the variables. Pesaran et al. (2001) recommend applying the F test to establish joint significance of the lagged level variables as a sign of cointegration. However, in this application, the F test has new critical values which they tabulate. Since they account for the integrating properties of the variables when producing the critical values, there is no need for pre-unit root testing and indeed, as they show, the variables in a given model could be a combination of I(0) and I(1) which are the properties of most macro variables; this is the main advantage of this method over other cointegration methods. Another advantage of this method is that both short-run and long-run effects are estimated in one step. Furthermore, the approach also deals with the multicollinearity or feedback effects that may exist among the exogenous variables by including a dynamic adjustment mechanism. As Pesaran et al. (2001, p. 299) write, “our approach is quiet general in the sense that we can use a flexible choice for the dynamic lag structure in …..as well as allowing for short-run feedbacks.”

The results

In this section we estimate the error-correction model (2) for Canada, Japan, Korea, U.K., and the U.S. using monthly data over the period January 1985–December 2016. These are the five countries for which continuous monthly time-series data on all variables were available from the sources cited in the Appendix. A maximum of eight lags is imposed on each first-differenced variable and Akaike’s Information Criterion (AIC) is used to select an optimum model. Since different estimates and diagnostic statistics are subject to different critical values, we have collected them in the notes to each table and used them to identify an estimate by \* if it significant at the 10% significance level and \*\* if it is significant at the 5% significance level. Furthermore, in each table we report short-run estimates in Panel A and long-run estimates in Panel B. Diagnostic statistics are reported in Panel C. The results are reported in Tables 1, 2, 3, 4, and 5.

[TABLES 1-5 OMITTED]

From Panel A in each table, we gather that all the variables carry at least one significant lagged coefficient in all the five countries, implying that all variables have short-run effects on stock prices. Exceptions are ΔLnCPI and ΔLnM2 in the results for U.K. and the U.S.. Concentrating on the new variable of concern in this paper (the measure of policy uncertainty), it has short-run effects on stock prices in all five countries and almost all the significant coefficients are negative, implying that an increase in uncertainty has adverse short-run effects on stock prices in all five countries.Footnote6 The next question of concern: do the short-run effects last into the long run?

From Panel B, we gather that only in Canada does the policy uncertainty measure carry a significantly negative coefficient in the long-run. Thus, it appears that in the remaining four countries, the effects are transitory. As for the long-run effects of other variables, the index of industrial production (LnIPI) carries a significantly positive coefficient in Canada, Korea, and the U.S., supporting the notion that economic growth has long-run positive effects on stock prices in these three countries. The remaining two variables, LnCPI and LnM2, do not have any significant long-run effects in any of the five countries.

In order for the long-run effects to be valid, cointegration must be established. The F test results reported in each table do not support cointegration since it is insignificant in all five countries. Of course, an alternative test for cointegration is to use the normalized long-run estimates from Panel B and the long-run model (1) and generate the error term. Denoting this error term by ECM, we move back to eq. (2) and replace the linear combination of lagged level variables with ECMt-1 and estimate this new specification after imposing the same optimum number of lags from Panel A. A significantly negative coefficient attached to ECMt-1 would support cointegration. Note that the t-test that is used to judge significance of these estimates has a new distribution. Since under the ARDL approach, variables could be a combination of I(0) and I(1), similar to the F test Pesaran et al. (2001, P. 303) tabulate an upper and a lower bound critical value for this t test. Except with the U.S., in the remaining countries ECMt-1 carries a significantly negative coefficient, validating the long-run effects.

Several other diagnostic statistics are reported in Panel C. The Lagrange Multiplier (LM) statistic is reported to test for autocorrelation. It has a χ2 distribution with one degree of freedom since we are testing for first order serial correlation. As can be seen, it is insignificant in all five models, supporting autocorrelation-free residuals. We have also reported Ramsey’s RESET statistic to judge model misspecification. This statistic is also distributed as χ2 with one degree of freedom, and it was found to be significant in only two models, which belong to Canada and the U.S.. Finally, to determine stability of short-run and long-run coefficient estimates, we follow the extant literature and apply the CUSUM and CUSUMSQ tests to the residuals of each model. Denoting these two tests by CS and CS2 in Panel C and indicating stable estimates by “S” and unstable ones by “U”, we gather that all estimates are stable by both tests in all the models.

As a sensitivity analysis, we replaced LnCPI in the model by the rate of inflation (INF) and Ln M2 by Ln (M2/GDP) to account for the size of each country’s economy. The results reported in Tables 6 clearly show that there is no change in our conclusion that policy uncertainty has short-run but not long-run effects on stock prices. Only in the results for Canada, the short-run negative effects last into the long run which was the case in Table 1 too.Footnote7

[TABLES 6-7 OMITTED]

Although continuous monthly data was not available for all the variables in other countries, data on stock prices and the measure of policy uncertainty were at least available for eight additional countries. Therefore, as an additional exercise, we carried out our estimation using a bivariate version of eqs. (1) and (2) for each of the 13 countries where stock prices only depend on the measure of policy uncertainty. The results are reported in Table 7 and as can be seen, again, policy uncertainty has significant adverse short-run effects on stock prices in 11 of the 13 countries.Footnote8 Only for Brazil and China are no short-run effects found. Furthermore, except for Japan, in none of the countries do short-run effects last into the long run. Even in the results for Japan, the long-run effect that was found is not supported by either of the two tests for cointegration.Footnote9

Summary and conclusion

A glance through the performance of the stock market in any country points to sharp drops during times of war, deep recessions, election periods, and more importantly during an uncertain environment. During other times, bad news usually hurts stock prices and good news boosts them. Are these adverse effects of different types of uncertainty on stock prices transitory or do they have long run implications?

In this paper we try to answer the above question by investigating the short-run and long-run effects of economic uncertainty on the stock prices in 13 countries. We use a comprehensive measure of policy uncertainty constructed by the Policy Uncertainty Group, based on the work of Baker et al. (2016). In constructing its uncertainty measure, the Group searches for words such as “policy”, “uncertainty”, “budget”, “tax”, “deficit”, “regulation”, and “spending” in as many newspapers as possible in each country and in each month. Policy uncertainty news is captured by including the word “uncertain” or “uncertainty” in all the searches. The Group then constructs a normalized index of the volume of news as a measure of policy uncertainty.

By using Pesaran et al.’s (2001) ARDL bounds testing approach to error-correction modeling and cointegration, which allows us to assess short-run and long-run effects, we find that in almost all 13 countries (Australia, Brazil, Canada, Chile, China, France, Germany, India, Japan, Korea, Netherlands, U.K., and the U.S.) for which we were able to find relevant data, policy uncertainty has significantly negative effects on stock prices in the short run, but not in the long run. These findings have important policy implications for investors and fund managers, such as the fact that they should not rush to sell when there is an uncertain event, because the effects will be short-lived. Rather, the sharp drop in the market could provide investors with a fruitful purchase opportunity.

### No Biz Con---Not Key---AT: Uncertainty

#### Regs don’t actually cause uncertainty. Conservatives just say they do because they dislike them, and then uncertainty indices that measure newspaper discussions count those very complaints as uncertainty!

Elon Green 11, has written for the New York Times Magazine, The Awl, and New York, “The "Uncertainty" Canard,” Demos, 10-3-2011, https://www.demos.org/blog/uncertainty-canard

A week after the White House released its jobs bill, Paul Ryan took Fox News to say this:

It adds further instability to our system — more uncertainty — and it punishes job creation and those people who create jobs. Class warfare, Chris, may make for really good politics but it makes for rotten economics.

The operative word is uncertainty. The word has no substantive meaning. It's most often used by financial reporters to explain the movement of stock markets ("Uncertainty Cripples Fixed Income Arena"), but lately it's become the hobbyhorse of conservatives, who deploy it like a crucifix and garlic whenever they get within a country mile of progressive legislation. Here's Bloomberg News:

House Majority Leader Eric Cantor says that “job-destroying regulations” have left “a cloud of uncertainty hanging over small and large employers alike,” preventing them from hiring new workers. Representative Michele Bachmann says that small businesses are “scared to invest in new jobs because of economic uncertainty.” Sarah Palin, how would you rescue us? “I’d eliminate the uncertainty in the economy.” Mitt Romney: Obama’s policies “have done the one thing employers can’t deal with ... created more uncertainty.” House Speaker John Boehner: “Uncontrolled spending over decades -- by both parties -- has created an environment of economic uncertainty that is destroying jobs.”

It's all so much nonsense.

As Larry Mishel notes, there's no evidence that econonimic growth has been stunted by government and central bank actions. "[T]his recovery," he writes, "is far more investment-led than the recovery under the pro-deregulation George W. Bush administration." Furthermore, private sector job growth tracks with recent recoveries, "suggesting that businesses are not reacting to a new threat of potential regulations and taxes."

It's not as if companies can't hire. That $2 trillion in cash they're sitting on could take a lot of people off the dole. But that's unlikely. In the wake of the tech bubble, many companies decided to hold more cash in lieu of debt. This proved shrewd during the financial crisis, observed The Journal, as "their stronger balance sheets helped them weather the storm."

### No Biz Con---Not Key---AT: Wait-And-See

#### Regulatory uncertainty doesn’t cause ‘wait-and-see’ effects. Recessions cause uncertainty, NOT the other way around.

Bachmann et al. 10, Ruediger Bachmann, Department of Economics, University of Michigan; Eric R. Sims Department of Economics, University of Notre Dame; Steffen Elstner Ifo Institute for Economic Research e.V. at the University of Munich, “Uncertainty and Economic Activity: Evidence from Business Survey Data,” NBER Working Paper 16143, June 2010, accessed via WebArchive, http://www.nber.org/papers/w16143

What is the impact of time-varying business uncertainty on economic activity? Using partly confidential business survey data from the U.S. and Germany in structural VARs, we find that positive innovations to business uncertainty lead to prolonged declines in economic activity. In contrast, their high-frequency impact is small. We find no evidence of the "wait-and-see"-effect – large declines of economic activity on impact and subsequent fast rebounds – that the recent literature associates with positive uncertainty shocks. Rather, positive innovations to business uncertainty have effects similar to negative business confidence innovations. Once we control for their low-frequency effect, we find little statistically or economically significant impact of uncertainty innovations on activity. We argue that high uncertainty events are a mere epiphenomenon of bad economic times: recessions breed uncertainty.

1 Introduction

What is the impact of time-varying business uncertainty on economic activity? Real options theory associates innovations to uncertainty with a “wait-and-see” effect: if firms suddenly find themselves in a more uncertain environment they stop investing and hiring and the economy slips into a recession. This “wait-and-see”-effect has recently attracted attention in the literature: Bloom (2009) and Bloom et al. (2009) use a quantitative RBC model with various adjustment frictions to capital and labor to argue that positive innovations to uncertainty lead to short-run fluctuations, starting with a rapid decline in aggregate activity, then a rebound phase and a prolonged overshoot after approximately six months.1 Prima facie, uncertainty shocks have appealing properties, chiefly among them that no technological regress is required to generate recessions. All that is needed are autonomous increases in business uncertainty.

Bachmann and Bayer (2009), exploring data from a detailed German firm-level panel, argue that the effects in Bloom (2009) and Bloom et al. (2009) are quantitatively small and do not substantially alter unconditional business cycle dynamics. This is confirmed in Chugh (2009), who explains the dynamics of leverage with innovations to micro-level uncertainty, but also finds a small business cycle impact of uncertainty shocks. Using a model with financial frictions, Gilchrist, Sim and Zakrajsek (2009) argue that increases in uncertainty lead to an increase in the cost of capital through an increase in bond premia which is followed by a decline in investment activity. In a similar framework Arellano et al. (2010) show that increases in uncertainty lead to downsizing of investment projects to avoid default.2 These papers employ mostly quantitative models and calibration exercises to study the impact of time-varying uncertainty on economic activity. What is missing from the literature are more agnostic studies of the economic effects of innovations in uncertainty.3

In this paper we use partly confidential monthly data from business surveys to investigate the relationship between uncertainty and economic activity within a structural vector autoregressions (SVAR) approach. We confirm the sceptical results in Bachmann and Bayer (2009) and Chugh (2009) without relying too strongly on a specific model and calibration. These business surveys contain qualitative information on the current state of, and expectations regard ing, firms’ business situations. Specifically, we use disagreement in business expectations for the Third FED District Business Outlook Survey (BOS) to estimate the impact of business uncertainty on economic activity.4 We also take seriously the potential criticisms against using aggregate disagreement measures as proxies of uncertainty. The German IFO Business Climate Survey (IFO-BCS) data allow us to do so. In particular, we use the confidential micro data of the survey to compare the disagreement-based measure of uncertainty with a qualitative index of the forecast error variance of production expectations. We find that the two uncertainty measures are positively correlated and that their impact on economic activity is qualitatively and quantitatively similar and statistically often indistinguishable. This justifies our use of survey disagreement as a proxy for uncertainty when micro data are unavailable.

We argue that these high-frequency business survey data are well suited to measure the direct impact of uncertainty on economic decision making. As discussed in the next section, “wait-and-see”-dynamics are rather short-run and rely on adjustment frictions, which render high-frequency data the best candidate to detect these dynamics. Aggregate business survey data are also readily available. All this puts qualitative survey data in an advantage over quantitative balance sheet data. Business survey data in particular capture the subjective element of uncertainty, viz the mind set of actual decision makers, as opposed to outside experts. Also, the confidential survey micro data allow us to compare expectations and realizations of economic variables and thus – as is the case with the IFO-BCS data – construct two complementary proxies of true ex ante uncertainty: ex ante disagreement and ex post forecast error variance.

We consistently find that in two-variable SVARs innovations to uncertainty have very protracted negative effects on economic activity. The effect on impact, in contrast, is small. This is documented in Figure 1, where we show in the lower panel an impulse response from a positive innovation to a measure of business uncertainty from the BOS on U.S. manufacturing industrial production. For comparison, the upper panel shows the impulse response from a negative innovation to a business confidence measure on the same activity variable. They look very similar. This is a robust finding across specifications and surveys.

We then impose more structure in the identification and add measures of business uncertainty to a VAR with sectoral economic activity and the aggregate unemployment rate in the spirit of Blanchard and Quah (1989). Consistent with the implications of “wait-and-see”, we identify the uncertainty shock as a shock which does not influence economic activity in the long run but which may influence both activity and unemployment on impact. We thus “shut down” the long-run impact of uncertainty in the hope of making its short-run influence shine through.

We find that there is little statistically or economically significant impact of uncertainty shocks on economic activity left. Rather, we provide some evidence that negative long-run shocks give rise to higher uncertainty, which leads us to interpret high uncertainty events as a mere epiphenomenon of bad economic times. We interpret this in light of the view of recessions as times of destroyed relationships and practices, the reestablishment of which generates uncertainty for businesses.

### No Biz Con---Low Now

#### It will be kept low by small business uncertainty and labor shortages.

Sforza 23 – Lauren, Staff writer at the hill.

Lauren Sforza, 1-10-2023, "Small business confidence lowest since June", Hill, https://thehill.com/business/3806769-small-business-confidence-lowest-since-june/

A new survey found that U.S. small business confidence has dropped to a six-month low and found that inflation and difficulty in filling positions were top issues cited.

The National Federation of Independent Business announced Tuesday that its Small Business Optimism Index decreased by 2.1 points in December to 89.8, which is the lowest since June and marks the twelfth consecutive month that the index was below its 49-year average of 98. Small business owners who expect better business conditions over the next six months dropped by 8 points between November and December, falling to a net-negative of 51 percent, according to the release.

“Overall, small business owners are not optimistic about 2023 as sales and business conditions are expected to deteriorate,” Bill Dunkelberg, the federation’s chief economist, said in the statement. “Owners are managing several economic uncertainties and persistent inflation and they continue to make business and operational changes to compensate.”

Inflation remained a top issue for small-business owners, as 32 percent said it was the top problem in their operations. Worker shortages also remained a problem, as 41 percent of business owners reported that open job positions were difficult to fill, which is a slight downtick from the 44 percent who reported the same issue in November.

The survey also found that 93 percent of owners hiring or trying to hire new people said there were few or no qualified candidates for the positions they were trying to fill. Twenty-seven percent of small-business owners said they planned to increase compensation for employees over the next three months.

#### Even if it recovers eventually, confidence has already been at a 10-year low for months.

Mutikani 5-9 – Lucia, MSc in Finance and Economic Policy from the University of London, reporter at Reuters.

Lucia Mutikani, 5-9-2022, "US small business sentiment slumps to more than 10-year low", Reuters, https://www.reuters.com/markets/us/us-small-business-optimism-deteriorates-april-nfib-says-2023-05-09/

WASHINGTON, May 9 (Reuters) - U.S. small business confidence fell to more than a 10-year low in April on worries about the near-term economic outlook and persistent worker shortages, but there were few signs that businesses were having difficulties accessing credit.

The National Federation of Independent Business (NFIB) said on Tuesday its Small Business Optimism Index dropped 1.1 points to 89.0 last month, the lowest level since January 2013. It was the 16th straight month that the index remained below the 49-year average of 98.

Higher interest rates tied to the Federal Reserve's battle to tame inflation combined with tighter credit conditions following recent financial market stress are stoking fears of a recession this year. A fight over raising the federal government's borrowing cap is also helping to cloud the economy.

### No Crowd-Out---2AC

#### Demand for private sector services means wages will rise to retain workers.

Krugman 18 – Paul, Professor of Economics at the Graduate Center of the City University of New York and a columnist for The New York Times. 2008 winner of the Nobel Prize in Economics.

Paul Krugman, 7-5-2018, "More on a Job Guarantee", New York Times, https://www.nytimes.com/2018/07/05/opinion/more-on-a-job-guarantee-wonkish.html

Here’s the way some of the critiques seem to run: a large share of the U.S. work force – Baker says 25 percent, but it looks like around a third to me – makes less than $15 an hour. So offering these workers a higher wage would bring a huge rush into public employment, implying a very expensive program.

What’s wrong with this argument? The key point is that all those sub-$15 workers aren’t just sitting around collecting paychecks: they’re producing goods and (mostly) services that the public wants. The public will still want those services even if the government guarantees alternative employment, so the firms providing those services won’t go away; they’ll just have to raise wages enough to hold on to their employees, who would now have an alternative.

### No Crowd-Out---1AR

#### A comprehensive analysis of empirical test cases goes Aff.

Zimmerman 20 – Laura, professor in the Department of Economics and the Department of International Affairs at the University of Georgia.

Laura Zimmerman, Why Guarantee Employment? Evidence from a Large Indian Public-Works Program, 2020, GLO Discussion Paper, No. 504 Provided in Cooperation with: Global Labor Organization (GLO), https://www.econstor.eu/bitstream/10419/215480/1/GLO-DP-0504.pdf

Figures 2a to 2d focus on four main outcome variables: public employment, private employment, family employment, and total private-sector employment, which is the sum of private and family employment. Figures 2a and 2b provide visual tests for the take up of public employment after the introduction of NREGS as well as for a crowding out of total private-sector employment. While public employment appears to be slightly higher in Phase 2 districts than in Phase 3 districts at the cutoff, the magnitude of this effect is extremely small and it is difficult to spot a discontinuity in the scatter points at the cutoff. A similar picture emerges for total employment. These results suggest that there is no economically meaningful take-up of NREGS after the program goes into effect, and no crowding out of private-sector employment as a whole after the introduction of the safety net.

#### Grants can be targeted to avoid displacement.

Tcherneva 18 – Pavlina, visiting scholar at the University of Cambridge's Centre for Economic and Public Policy, research scholar at the Levy Economics Institute, M.A and PhD in economics from the University of Missouri-Kansas City.

Pavlina R. Tcherneva, 2020, The Case for a Job Guarantee, Polity Press.

While the buck stops with the Department of Labor, which must ultimately ensure that the Job Guarantee mandate is met, the program is better administered in a decentralized manner. Municipalities in cooperation with community groups could conduct assessment surveys, cataloguing community needs and available resources as they design the community jobs banks. Community organizations, non-profits, social entrepreneurial ventures, and cooperatives can also apply for funds directly to the Department of Labor. Grants are approved contingent on 1) creation of employment opportunities for unemployed people; 2) no displacement effect of existing workers; and 3) useful activities performed, measured by their social and environmental impact.

The Job Guarantee need not reinvent the wheel in terms of administrative infrastructure, as a fair amount of it already exists. The American Job Centers already provide payments (unemployment insurance) to the unemployed, job search assistance, referrals, training, GED completion, résumé building, English as a second language lessons, math and reading training, and other one on-one services, such as stress and financial management courses. At the same time, localities, municipalities, and non-profits already run projects that address public needs. All of them are understaffed and underfunded. The Job Guarantee will build on the existing administrative and institutional framework to match needs with resources.

Applied globally, the administration of the program will be country specific. For example, in Argentina, a very decentralized network of community groups had designed and managed its projects, while in Brussels a sophisticated infrastructure of employment and training options, caseworkers, and comprehensive wraparound services are provided to the unemployed by one public agency (more on this below).

The goal is to offer a rewarding activity that ensures social recognition and empowers participants via a bottom-up design, encouraging direct input from citizens, community members, and other stakeholders representing the public interest in the proposal, management, and execution of the projects. Such a participatory democracy approach can be found in many places around the world, from the zero-unemployment-zone experiments in France to democratically run public works projects in Brazil and Germany. Participatory budgeting models globally use citizen assemblies, information technology, and different organizational methods to ensure citizen input on local projects and budgeting allocation. Endorsed by international organizations such as the UN and the World Bank, participatory and gender-aware budgeting significantly improves effectiveness, equity, and the overall results of such programs.

Because the Job Guarantee program encourages citizen input, puts pressure on punitive private sector labor practices, and invests in the public good, it can be an institution with profound democratizing tendencies, functioning as a conduit for transformative change in the workplace, in people’s everyday lives, and in the economy as a whole. Differences from Other Proposals Before digging into the types of jobs that the program could create, it is helpful to highlight some features that are specific to this proposal. The aspect that unites all Job Guarantees is the human rights framework and the focus on jobs with dignity and a minimum standard.1

The differences tend to center around the level and structure of the Job Guarantee wage and the program’s administration and management. The proposal presented here favors a fixed living wage with basic benefits, as opposed to tiered wages.2

A tiered wage structure caused much political wrangling during the New Deal era and ultimately undermined support for many projects. A tiered structure also does not have the price stabilization features described earlier. The program’s minimum wage floor pressures private employers to match it, but it does not compete with them for skilled workers across the wage spectrum, which can cause wage bidding for skilled workers who already enjoy comparatively stronger income growth and better employment conditions. The goal here is to firmly secure the living-wage floor.

The Job Guarantee wage in this proposal is also not indexed to inflation, so as not to embed an automatic wage-price inflationary mechanism. Instead it incorporates legislation for regular reviews and mandatory increases of the wage, in lockstep with increases in productivity, to ensure it maintains a decent living standard. Note that, since the Job Guarantee would more than double the current minimum wage (from $7.25 to $15/hour), it could produce a one-time jump in prices as firms adjust to the new higher wage level.

However, this one-time increase should not be confused with inflation – which is a continuous increase in the price level. Such a significant one-time wage increase would not be unprecedented. In 1949, the minimum wage was nearly doubled without accelerating inflation, at a time when the economy was as close to true full employment as it has ever been in the postwar era.

Additionally, this proposal favors a highly decentralized administration. Job Guarantee workers are not typically federal employees even though the program is federally funded. The decentralized model is preferred for several reasons. First, depending on the state of the economy, the program may need to employ as much as 10 percent of the labor force. This would require expanding the federal labor force fivefold. States, localities, and nonprofits are much better suited to accommodate such an expansion by comparison, as they already comprise about 20 percent of total employment.

Including non-religious and non-political non-profit organizations into the program’s administration would have a significant democratizing potential. Such organizations are an important source of social innovation and the federal government already contracts with them. A plurality of local non-profits and cooperatives can enhance democratic decision making. Local advocacy groups already put pressure on the federal government to help address their constituents’ concerns, and cooperatives have been shown to empower their members, increase asset creation, and reinvest in their communities. Indeed, the public purpose is already met by a broad set of intertwined institutions. Engaging them in the Job Guarantee design could help broaden civil society.

The present proposal also does not rely on large-scale infrastructure for job creation. Infrastructure investment is a permanent function of government that has been grossly underfunded and neglected. Vital levee, bridge, and highway projects should not fluctuate with the business cycle, nor should they be discontinued in expansions. And as they are often staffed with high-skilled union workers, the Job Guarantee must take great care not displace them. But the Job Guarantee can organize smaller projects that can be added or postponed, depending on economic conditions. It can also unionize its own workforce. Putting in place and fortifying our nation’s infrastructure to prevent, mitigate, and withstand the impact of intensifying hurricanes, tornadoes, fires, and floods requires immediate action and a large labor force. If a major infrastructure program were attempted as part of the Green New Deal industrial policy, the Job Guarantee itself would be much smaller than in its absence.

#### Volunteerism offsets the crowd-out effect.

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Pavlina R. Tcherneva, 2018, The Job Guarantee: Design, Jobs, and Implementation, Levy Economics Institute of Bard College, https://www.levyinstitute.org/pubs/wp\_902.pdf

38. Wouldn’t the JG workers crowd out many volunteer opportunities?

Not necessarily. It may enhance volunteerism.

Some people who volunteer today may be doing so in hope of getting a paid employment opportunity. Some may prefer to be paid through the JG. Many others, however, volunteer for personal reasons and the JG does not prevent them from continuing to do so. The school librarian may get an assistant through the JG program, but parents can continue to volunteer during school library book fairs or PTA events. 58

Volunteering is a key community-building practice, but not a particularly good mechanism for addressing social ills comprehensively and on an ongoing basis. Today many people are overworked and underpaid, juggling several part-time jobs to make ends meet. For them volunteering is simply not an option, even if they wanted to do it. They may not have the time or resources to volunteer. It is possible that the economic security that the JG provides would make volunteering more accessible for many.

### No Crowd-Out---AT: Can’t Fire

#### People would be fired if they didn’t show up which prevents free riding.

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26. Can JG workers be fired?

Yes. People are paid to work. If they do not show up to work, they will not collect a check. If they threaten the safety of others, they will be let go.

However, when considering this question, it is important to note that the JG is not run for profit. It produces public goods and services. The program’s success and individual performance in the program will not be judged by private sector “efficiency criteria.” Its reason for existence is fundamentally different—it is to fit jobs to people; to serve the needs of the environment, community, and people; and to enhance the public good. Its purpose is not to minimize costs and maximize profit.

Therefore what constitutes nonperformance in the JG will differ greatly from that of a private firm. A person cannot be fired for doing work that is considered “not profitable.” They can be let go for nonperformance, as defined above (e.g., not showing up or safety concerns), but only after they have been mentored and provided ample assistance to be successful on the job. Because the JG fits jobs to the person, it may be that “the match” is not a good one. Then, every effort will be made to move that person to another work opportunity where they can be successful. If external factors impede one’s ability to hold onto their JG job—drug or alcohol abuse for example—they can be referred to the necessary rehabilitation programs, which can be provided through the JG itself. The JG is a step toward a more holistic approach to addressing the multiple deprivations many families face.

The point of the JG is to help enhance the public purpose. One component of that public purpose is to find a mechanism for anyone who wants to work to be able to perform and benefit from the JG job.

#### That is illegal.

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9. Wouldn’t the JG displace existing forms of public sector work?

The JG is authorized as a new program, under a new agency. Its primary objective is to provide work to the unemployed at a living wage in projects that enhance the public purpose. As a new program, the JG aims not to replace existing public sector work. In other words, the Food and Drug Administration cannot lay off its food and drug inspectors and transfer them onto the JG payrolls. A library or a school cannot lay off its librarians and teachers and rehire them through the JG.

However, because the JG aims to enhance the public purpose, it can provide teachers’ aides to alleviate the burdens teachers face in the classroom. It can also offer and staff activities before and after school that currently do not exist in the school curriculum. If it becomes evident that these teachers’ aides are much needed and must be staffed on an ongoing basis, they should be transitioned out of the JG program and moved to traditional school district employment.

### No Crowd-Out---AT: Government Inefficient

#### Empirics disprove, AND private sector also has inefficiencies.

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No. Direct employment programs around the world demonstrate that it is not difficult to find “useful things” to do. These programs have strong positive effects on people, communities, and the environment. For the lasting impact of direct job creation in the United States, refer to this map: https://livingnewdeal.org/map/.

While some public projects may fail, as is also the case in the private sector, in general public job creation programs tend to be successful and popular. Not only do these programs fill important needs gaps and make a material impact on communities and peoples’ lives, but they also empower.

The JG removes the existing threat of unemployment, which private firms use in their hiring practices. The JG puts upward pressure on wages at the bottom of the income distribution. It also provides opportunities for cooperative work arrangements. It can socialize some forms of production that are done for profit and demonstrates that people are capable of running and organizing their communities on their own.

Therefore, the challenge these programs face is not that there aren’t enough useful things to do, or that they will create make-work projects. The challenge is that, because of their effectiveness, 44 they tend to run against private interests, which then mobilize and exert considerable outside pressure to underfund and privatize them—a challenge that is serious, though not insurmountable (see question 47).

### No Inflation---2AC

#### Job guarantee’s stabilizing, NOT inflationary---the Phillips Curve is wrong---a JG replaces natural unemployment with a natural buffer stock, which has the same effect.

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A well-implemented job guarantee would act as a Minskian instability thwarting mechanism, providing an anchor for inflation and the norms used as a basis for pay negotiations and price setting. To understand this fully, it is necessary to recall the orthodox approach to modelling inflation; to appreciate the degree to which any such approach to understanding the drivers of inflation, when shorn of historical, social and institutional factors which cannot easily be fit into a mathematical model, is liable to be misleading; and to emphasise the lack of convincing empirical support for the orthodox approach.

Phillips Curves

The modern, orthodox approach is based on the New Keynesian Phillips Curve, or aggregate supply equation, which was described in Chapter 2. That approach, with its forward-looking households and their rational expectations, is extremely unrealistic. At least Milton Friedman’s monetarist approach, on which the New Keynesian theory was built, is superficially more plausible. Friedman’s version is known as the Expectations-Augmented Phillips Curve.4 In Friedman’s model, unemployment below its natural rate is combined with accelerating inflation, while unemployment above its natural rate is essential for the inflation rate to fall.

[EQUATION 7.1 OMITTED]

where (‑t − ‑t−1 ) represents the change in the rate of inflation between time t and t−1; ut and unt represent the unemployment rate and the natural rate of unemployment, at time t, respectively, ­t represents a costpush ‘shock’ to inflation, and ­ > 0.

This formulation is very flexible, in that the ­t term is always available to allow for any changes in the inflation rate which are difficult to account for with respect to output gaps. More importantly, the output gap (and ‘natural rate of unemployment’ or ‘non-inflationary inflation rate of unemployment’) is itself free to vary and has no well-defined and generally agreed set of determining factors. Indeed, in addition to trends for output, recent inflation and unemployment data are commonly used as inputs in the process of estimating the current ‘natural rate of unemployment’ and ‘potential’ output.

However, there remains one big problem with this ‘accelerationist theory’ of inflation. It is the fact that significant variations in unemployment, which are difficult to account for as being due to changes in any ‘natural rate’ of unemployment or trend growth for productivity, regularly happen with no evidence of either continuously accelerating or decelerating inflation as a result (Fig. 7.6).

[FIGURE 7.6 OMITTED]

For example, there has never been any convincing evidence in favour of the natural rate or ‘accelerationist’ hypothesis in data for the USA. It is not impossible to amend the orthodox model to make it fit the data, by building a sub-model to ‘explain’ shifts in the non-accelerating inflation rate of unemployment over time. However, there is no good reason to do so. We have established that the soft economics of real analysis is not built on reliable foundations. It is not the most plausible available explanation for the changes in inflation and unemployment rates in the USA over time. It is not clear that generalised excess demand has been a significant driver of inflation at any stage since 1952, either in the USA or in other high-income economies. We are free to consider other, more plausible explanations.

It is possible, based on historical, social and institutional factors and on subjective judgement, rather than on statistical testing, to divide these 64 years into six discrete periods of time. Within five of these six periods, there was relative stability regarding the social norm for inflation, with the sixth period being marked at its beginning by a combination of an oil price shock and a fight over the distribution of income in a stagnating economy, and at its end by a political transition from the post-war consensus to neoliberalism, and from Neo-Keynesian to monetarist supply- side economics.

The six periods are as follows:

1. Post-war prosperity (1952–1967)

2. The Nixon years (1968–1973)

3. Stagflation and the shift to neoliberalism (1973–1982)

4. R eaganomics and after (1983–1991)

5. The ‘Great Moderation’ (1992–2008)

6. Great Recession and recovery (2009–2016)

The first period was one of relatively stability, with an average annual inflation rate of approximately 1.6% and an average rate of unemployment of below 5%. During the second period, when the average rate of inflation increased to almost 5%, the average rate of unemployment remained below 5%. It is tempting to contrast 2017 data with these years, and to argue that the labour market today compares quite well, at least if you ignore the far higher degree of income and wealth inequality than existed back then. However, it is probably more appropriate to compare these rates of unemployment with U6 unemployment rates today, than U3 statistics, since there was far less underemployment in the 1960s than there is today. Those were years of shared prosperity, close to full employment, and, until the late 1960s, low inflation. Labour productivity was rising, union membership was much higher than today, and the bargaining power of labour was able to limit Kalecki’s ‘degree of monopoly’ in the business sector. Hence, real wages rose in line with increasing productivity, and inequality fell. Broadly similar circumstances existed in other high-income economies during those years, for similar reasons.

By the late sixties, however, productivity growth had begun to stall, and accelerating costs had begun driving upwards the social norm for inflation. The upwards shift in inflationary expectations after about 1967 is shown on the chart. Minsky attributed rising inflationary pressures, at least in part, to the use of Neo-Keynesian pump priming, incentives for private-sector investment, and social welfare, in pursuit of full employment and a war against poverty, rather than opting for a job guarantee to achieve the same objectives. The social and economic factors which had allowed for two decades of prosperity and low inflation were temporary, and the appropriate institutions were not in place to stabilise an unstable economy.

The big increase in inflation happened during and subsequent to the oil shock of 1973. This was followed, in the USA and around the world, with a transition away from policies designed to keep the economy close to full employment, and towards those aimed at bringing inflation back down to something like its levels in the fifties and sixties. By the early eighties, those in power in the USA, the UK and most other high-income countries were committed to the use of tight monetary policies to crush inflation and claimed that only neoliberal supply-side policies and trickle-down economics could deliver growth. The extent to which it was really the high interest rates of these years which brought inflation back down, or other factors driving falling oil prices, is a controversial issue. What is less controversial is the increase in unemployment and inequality which those policies caused. Unemployment rose to its highest level since the 1930s and remained high for much longer than the proponents of a monetary squeeze had anticipated.

The downward pressure on the share of wage income in real GDP associated with the energy shock and subsequent economic policies can be explained with reference to Kaleckian income distribution theory, as outlined in Chapter 3:

[EQUATION 3.10 OMITTED]

This is an equation for the before-tax share of wage income in GDP, where m is the pricing mark-up over labour and material costs, covering both overheads and before-tax profits, and dependent on ‘the degree of monopoly’, and j in this context can be interpreted as the share of oil producers in GDP.

If the degree of monopoly and the mark-up don’t change, then an increase in j, due to a significant increase in the relative price of oil, puts downward pressure on the share of wage income in GDP, and upward pressure on the share of capital income out of a diminishing real GDP.

Against the background of prolonged full employment, an apparent social contract that real wages would continue to rise as before, and with powerful trade unions, it appeared that social conflict inflation was likely. This is particularly the case given that the increased economic uncertainty provided greater scope for what Babcock and Loewenstein called self-serving bias in assessing what are reasonable wage claims. I contend that this description of the changing circumstances between 1970 and 1974 is far more useful than any version of the New Keynesian/Expectations-Augmented Phillips Curve.

The period from 1974 to 1991 was far less successful in terms of economic outcomes than what had come before and was characterised by much higher levels of unemployment, and the beginnings of significant underemployment, among people forced into part-time work for economic reasons. Monetarism and supply-side reforms worldwide transformed the norm for what could be expected from governments, particularly in the context of the labour market; privatisations and financial deregulation helped to create the conditions for Minsky’s ‘money manager capitalism’ and growing financial fragility; and tax reforms greatly decreased the progressivity of tax systems. Unemployment remained very high, compared to the norms of the fifties and sixties, and was highly variable.

Against the backdrop of another recession, there was a further transition, partly due to global factors, but exacerbated by domestic policies, in the early 1990s. Between 1980 and 1992, the rate of inflation had fallen decisively enough, so that a combination of underemployment and insecure employment; reforms to the labour market and structural changes to the economy that undermined the bargaining power of labour and increased Kalecki’s ‘degree of monopoly’; an increasing supply of goods and competition for domestic labour from low wage workers in Mexico, and later in China, and in other emerging economies; for the majority of the period lower energy prices; and, from 1993, an increasing acceptance that the Federal Reserve would set interest rates to stabilise inflation at a permanently low level, all helped to restore the social norm for inflation to a level similar to that of the 1960s. The economy had reached its ‘great moderation’, and orthodox macroeconomics had settled on its New Keynesian ‘new consensus’, with the Taylor Rule, supply-side policies, and a neglect of genuine full employment and income inequality.

The Great Recession showed the great moderation as the fraud that it was, and should have caused economists to abandon their ‘new consensus’ dynamic stochastic general equilibrium model. Instead, soft economics swept the fraud under the carpet, soft economists adjusted their model without, in the case of the majority, considering whether the whole model should be abandoned, and effectively the profession went on as though nothing significant had happened. Not surprisingly, the chart shows that the shock of 2008 caused the social norm for inflation to drop further still, so that inflation was less of an issue in the decade following the Great Recession than it had been at any time since the 1930s.

It is very difficult to describe the above in terms of rightward and later leftward shifts in a ‘natural’ rate, or non-accelerating inflation rate, of unemployment. It is better to reject the natural rate hypothesis and the associated accelerationist theory of inflation as a useful description of history. This means a rejection of the Expectations-Augmented Phillips Curve and the entire orthodox macroeconomic model. By this stage in the book, this should not be a surprise. This approach to macroeconomics was shown to be misleading in Chapter 2, and since then we have been constructing a more useful map to guide us to sustainable prosperity.

A Three-Part Phillips Curve

If we are to reject the Expectations-Augmented Phillips Curve as a useful tool to use for the discussion of a job guarantee, the question which arises is what to put in its place. The data are largely consistent with a Phillips Curve which is horizontal across wide variations in the rate of unemployment, but which shifts over time due to changes in social and institutional factors and inflationary expectations.

Godley and Lavoie, in their more sophisticated models, use a target real wage equation, consistent with a Phillips Curve with a horizontal mid-range settlement.5 This is justified with reference to a variety of empirical studies, including one by Barnes and Olivei (2003). The Barnes and Olivei study compares a three-part Phillips Curve, against a more conventional Phillips Curve, using US data from 1961 to 2002, both for a constant ‘natural rate of unemployment’ and time-varying Congressional Budget Office estimate of the NAIRU. The authors show not only that the three-part version is a statistically significant improvement to a conventional Phillips Curve. They also show that it performs much better when used as a basis for dynamic simulation. The middle section of their Phillips Curve has a statistically insignificant slope coefficient, which is entirely consistent with a horizontal mid-range segment.

If we are to use any kind of Phillips Curve relationship to characterise the socially and institutionally conditioned relation which may exist between inflation and unemployment, it seems best to use an approach consistent with the above, where the horizontal section is drawn at the current inflation norm. This is notwithstanding the potential for significant and rapid changes in unemployment to shift that inflation norm, which also shifts when other factors change which influence the relative bargaining power of labour and capital, or when institutional factors cause changes in inflationary expectations.

In the discussion below, I will retain the term NAIRU (non-accelerating inflation rate of unemployment) to denote the unemployment rate below which the inflation rate may rise or even plausibly accelerate over time, but avoid referring to this as in any sense a ‘natural rate’, and use the term SLUMP for an unemployment rate above which the inflation rate is likely to fall, and could potentially turn negative (Fig. 7.7).

The inflation norm can be interpreted as the expected rate of inflation, when unemployment remains between NAIRU and SLUMP, but even then it will not be met if there are significant short run cost-push factors not related to the labour market (e.g. changes in energy prices). Changes [FIGURE 7.7 OMITTED] in social, institutional or structural economic factors, such as I have briefly discussed above, have the potential to change this inflation norm over time, shifting the curve up or down, or to change the NAIRU and SLUMP unemployment rates limiting the mid-section of the curve.

While the unemployment rate remains between NAIRU and SLUMP, there is no reason to anticipate that moderately paced changes in the rate will have an impact on inflation. If the unemployment rate falls below NAIRU, the tightness of the labour market implies the likelihood of rising real wage aspirations in pay bargaining and therefore rising inflation. It is a mistake to describe this as demand-pull inflation. There are still unemployed and underemployed resources in the economy. If the unemployment rate rises above SLUMP, the bargaining power of workers is reduced by employment insecurity and the threat of unemployment or underemployment, and inflationary pressures are moderated. As I have said, the location of NAIRU and SLUMP will not be constant, with Barnes and Olivei estimating that unemployment rates of between 4 and 6.5% were consistent with stable inflation in the USA between 1985 and 2002.

A modified form of ‘accelerationist’ argument can be rescued from the above. If unemployment falls below NAIRU and remains there for long enough, then the new higher rate of inflation will become the social norm, and the continuation of unemployment below NAIRU has the potential to stoke further increases in inflation. This depends very much on social institutions, however, and is not automatic. In addition, a low level of unemployment over time has the potential to reduce the NAIRU, so that the rate at which non-inflationary employment can be sustained is subject to hysteresis.

The inflation norm seems to have shifted significantly twice in the USA, since the 1950s. The first time was a big upward shift in the early to mid-1970s, when it was a mix of cost-push and institutional factors which were to blame. The second was the recession of the late 1970s and early 1980s, when both the persistent rise in unemployment above SLUMP and the speed with which unemployment rose were the main driving factors.

One very real and pressing problem is that the level and structure of real output necessary for the private sector to approach full employment may not be ecologically sustainable, due to the emission of waste; excess use of renewable resources; depletion of non-renewables; and losses in biodiversity. Ecological economists have long advocated the rationing and pricing or taxation of ecological resources, in order to ensure sustainability conditions are respected; and to refrain, at the micro level, from activities which do not have properly defined marginal social benefits in excess of their marginal social costs. The pricing of ecological resources creates an inflation barrier similar to structural unemployment, and one which may bite earlier.

The problem in this case is not with the immobility of labour, so much as a need to redirect employment to ‘green’ activities, or at least activities with less damaging ecological consequences, and possibly even to allocate opportunities for paid employment and real incomes in a steady-state economy (where ‘steady state’ refers to the employment of ecological resources), divorcing the goal of full employment from a requirement to maximise growth in real GDP.

However, the NAIRU concept is interpreted within this model, and it is important to remember the human consequences of involuntary unemployment and underemployment, it is clear not only that there was a persistently low norm for inflation during the 1950s and 60s, but that there was also a persistently low NAIRU. While a particular set of historical, social and institutional factors permitted the attainment of consistently high levels of employment by conventional Neo-Keynesian methods, from the 1940s to the early 1970s, those specific factors were temporary and cannot be precisely restored. This does not, however, mean that it is impossible for tight full employment to be firstly achieved and secondly maintained, even based on the U6 measure of unemployment.

Keynes, Kalecki and Minsky were among the most prominent economist to have noted that the failure to provide for and sustain full and equitable employment is a characteristic failure of capitalist economies. Keynes identified mass unemployment to be the result of a failure of the effective demand for labour and therefore technically within the power of governments to eliminate. Kalecki agreed that governments are technically able to eliminate unemployment, but believed that they would not choose to do so persistently, due to considerations of political economy.

Minsky saw both welfare payments to the unemployed and traditional Keynesian pump priming as ineffective solutions to a lack of effective demand for labour. One of the reasons was that both would prove to be inflationary. Minsky explained and advocated for an employer of last resort scheme, or what we now call a job guarantee, as an instability thwarting mechanism, and a way to deliver equitable, sustainable and non-inflationary full employment.

Replacing NAIRU with NAIBER

What is needed is a new institutional framework for delivering and maintaining full employment. It involves guaranteed employment and the replacement in the model of the NAIRU with a NAIBER (Mitchell 1998). NAIBER stands for the ‘Non-Accelerating Inflation Buffer Employment Ratio’. The buffer employment ratio replaces the unemployment rate with the ratio of workers in the job guarantee scheme relative to the total available labour force. This is the replacement of our existing buffer stock of the involuntarily unemployed and underemployed with an employed buffer stock of workers within a public-sector job guarantee. The scheme would be a shock absorber for the economy— expanding to employ workers when they have been shed from the private sector during a downturn, and contracting automatically as the private sector absorbs labour from the job guarantee scheme in an upturn.

Ecological modern monetary theorists have referred to an ecologically sustainable NAIBER, or ESNAIBER,6 in the context of a job guarantee as an element in a transition to an ecologically steady-state economy, given the ecological constraints referred to above.

The NAIBER could be below or above the NAIRU, once an employment guarantee scheme was in place. The availability of a paid job in a job guarantee might reduce the disciplinary effect that the threat of job losses can exercise on real wage aspirations and inflationary pressure. If so, the NAIBER may be above the NAIRU. On the other hand, competition from an employed buffer stock of replacement workers, as opposed to an unemployed buffer stock, might increase the discipline, in which case the NAIBER may lie below the NAIRU. In any case, those in the job guarantee would not be unemployed and would be performing work of social value.

It would be a positive supply-side measure, as it would retain workers in socially productive employment, when there is no demand for them at an acceptable real wage within the private sector. In addition, training and further education would be offered to participants as part of the scheme.

It would set minimum socially acceptable real wage rates and working conditions across the economy generally, as workers without bargaining power would now always have the option of working in the scheme.

It would be ‘green’, in the sense that those activities carried out within the scheme would either contribute positively to the natural environment or at least would be designed to minimise their environmental impact, free of the need to generate a financial profit.7

Godley and Lavoie have emphasised that full employment requires a specific fiscal stance, given the spending and portfolio preferences of the private sector and the overseas sector. The problem is to determine the level of that fiscal stance, given the inherent complexity and uncertainties of the economy. The job guarantee is, as I have said, a bottom-up approach to fiscal policy, which, if well administered, ensures that funds are spent where they are needed and at the level that is necessary to deliver full employment—no more, no less.

An employment guarantee can contribute towards a more stable economy, by taking unemployed workers as they are and where they live, and providing them with the opportunity to undertake work of social value. This eliminates structural unemployment based on either occupational or geographical immobility. It provides a fiscal stimulus which is targeted to those regions where it is needed and which leads to the employment of those whom the private sector will not currently employ if the economy is to sit below its inflation barrier. Over time, a well-designed job guarantee scheme should not only provide employment of social value, and a variety of psychological benefits to would-have-been-unemployed described elsewhere in this chapter, but would also enhance the marginal employability of job guarantee workers in the private sector.

Labour saving technological change, plus the requirements of ecological sustainability, might gradually increase the size of the job guarantee scheme and the NAIBER over time. Increasing participation as discouraged workers are attracted to join the job guarantee scheme will also increase the size of the scheme relative to the economy as a whole, while the impact of an ageing population will mitigate and could reverse these effects. It is plausible to suggest that a job guarantee scheme may be required to grow in scale, diversity and complexity, unless or until social attitudes and norms towards employment hours and the role of paid employment in contributing towards well-being eventually change.

#### A degrowth-oriented MMT job guarantee wouldn’t cause inflation---it’d cannibalize private consumerism at a rate that offsets declining supply from state intervention.

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2.3. Controlling inflation

Not unlike central bankers (Tarullo, 2017), degrowth scholarship lacks a coherent theory of inflation. MMT offers just such a theory.

Inflation represents social conflict over the distribution of scarce goods and resources, mediated by the price system. Distributional conflicts typically take the form of inflation when aggregate supply does not keep up with growing demand. For instance, the root cause of the current inflation are disruptions in the global supply of consumer goods (due to the pandemic), energy and food (due to the war in Ukraine). Prices are shaped not just by supply and demand, but by institutions and power (Bernal, 2021). When producer oligopolies or a workforce with collective bargaining power seek to protect or increase their share of aggregate income through raising prices or wages, this can lead to inflation (Mitchell et al., 2016; Wilson, 2021; Wray, 2015). For instance, as the Covid experience shows, inflation may be driven by supply-chain bottlenecks, or by producers using a transitory increase in input prices to substantially increase their profit margins, which in turn can drive inflation (Bernal, 2021).

One challenge for a degrowth transition is that an increase in public expenditure implies, ceteris paribus, an expansion of aggregate demand.4 An increase in aggregate demand that drives an expansion of aggregate supply amounts to economic growth. However, if the expansion in demand occurs under conditions of reduced supply due to limitations imposed on productive capacity, inflation may ensue.

To control inflation, some MMT economists favor an expansion of productive capacity in sectors facing supply bottlenecks through targeted industrial policy (e.g. Nersisyan & Wray, 2022). Similarly, prominent Keynesian GND proposals suppose that growth of aggregate supply is required to match the initial increase in aggregate demand, in order to prevent inflation (e.g. Pettifor, 2020). For high-income countries, where resource and energy use exceed sustainable levels, this is not ecologically viable. Consequently, a degrowth scenario does not permit the expansion of aggregate supply. On the contrary, Degrowth policies such as work time reduction or caps on resources and energy will significantly reduce productive capacity.

In order for a degrowth transition to be conducted in a manner that does not induce inflation, the demand for energy and raw materials must be reduced at least as fast as their supply. This means actively reducing effective demand in any sectors that do not contribute to social and ecological goals, so as to neutralize the expansionary effects of increased public spending and the inflationary pressure resulting from the simultaneous reduction in productive capacity. In short: the era of cheap mass consumption goods must end, but if the era of cheapness ends before that of mass consumption goods, there would just be more expensive mass consumption goods.

Even the proposal for funding a GND without growth (Mastini et al., 2021) can be reconsidered through this lens. For instance, shifting public expenditure away from fossil fuel subsidies and military spending is obviously reasonable, but strictly speaking, its effect is not to “free up room in the government’s budget”, but instead to reduce effective demand in sectors that should degrow, and therefore to create macroeconomic and ecological space for increased public spending in useful sectors.

3. Degrowing Modern Monetary Theory

MMT economists are often careful to stress that the “T” stands for “theory”, not for “transformative policy platform”. Arguably, like any economic theory, MMT is both. In both its descriptive and its normative capacities, it features increasingly prominently in contemporary left-wing discourse, while its descriptive aspects are now accepted by some parts of the financial and political establishment (Mackintosh, 2021).

Strictly speaking, there is only one policy that MMT economists actively call for, and that is the job guarantee (e.g. Tcherneva, 2012; Wray, 2015; Hail, 2022). However, most support other left-wing policy proposals, including progressive taxes on wealth and income, a Green New Deal and an extension of public services (e.g. Nersisyan & Wray, 2021; Hail, 2022), as well as fundamental reforms to the international monetary system (e.g. Kaboub, 2021; Tymoigne, 2020). MMT and degrowth thus share a remarkable overlap in their policy proposals, which we focus on in section 4.

Obviously, the insights of MMT can be used not only for progressive purposes, but also to pursue growth, industrialization, or war. Indeed, aggressive state-spending has marked some authoritarian and imperialist regimes historically (Tooze, 2006; 2022; Levey, 2021; Merchant, 2021; consider also Knapp, 1909, 1918). That is precisely why it is important to integrate the explicitly anti-imperialist, decolonial and radical-democratic perspectives of degrowth into the MMT discourse.

### No Inflation---1AR

#### The plan is counter-cyclical and reduces inflation.

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Pavlina R. Tcherneva, 2018, The Job Guarantee: Design, Jobs, and Implementation, Levy Economics Institute of Bard College, https://www.levyinstitute.org/pubs/wp\_902.pdf

15. Why do you say that the JG has a superior anti-inflationary mechanism?

There are only two buffer stock options with respect to inflation control. Either we allow the pool of the unemployed to expand and shrink with changes in economic activity (the status quo), or we devise a long-run program to directly employ the unemployed that does the same. Currently the Federal Reserve uses unemployment to control inflation. The non-accelerating inflation rate of unemployment (NAIRU) is the benchmark policy guide for deciding when to step on the brakes and slow down economic growth. If the Fed deems that the pool of the unemployed has shrunk to “undesirable” levels (put simply, that too many people have jobs), it increases interest rates with the intent to slow down purchasing power, increase unemployment, and thus remove any inflationary pressures that may result from too many people having jobs 42 and income. This, as the late Nobel Prize–winning economist William Vickrey argued, is the equivalent of economic vandalism.

By contrast the JG expands in recessions (deflationary periods) and contracts in expansions (inflationary periods), serving the exact same function of responding anti-cyclically to changes in aggregate demand that the NAIRU is supposed to serve, except it does it by establishing an above-poverty wage floor, providing jobs for all who need them, producing socially useful output, and reducing the outsized costs of unemployment.

#### A jobs guarantee would also expand aggregate supply and reduce government spending in other areas. That offsets the economic costs.

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32. Won’t the JG increase the size of government?

Not necessarily. Depending on the program’s impact on the social costs of unemployment, it could arguably even shrink government.

Most people fear the financial costs of these programs. As discussed in question 1, they are still relatively modest given our bold assumptions about the size of the program: 0.8 percent to 2 percent of GDP. However, that number is rather meaningless unless it is compared to the social benefits derived from these programs.

The JG does aim to increase the supply of public goods, while reducing the outsized social, economic, and political costs of unemployment. Second, our model indicates that it permanently increases GDP and private employment. Finally, the JG moves countercyclically—the stronger the economy, the smaller the program. It will swell in recessions, providing the countercyclical stabilizing force that restores private sector payrolls. As a consequence, the program shrinks with recoveries.

As was discussed above (e.g., question 3), the real costs of unemployment are enormous and already paid for. The physical and financial resources US states dedicate to dealing with incarceration, poverty, poor health, and other social ills are already very large. If the JG has the preventative effects discussed above, it may in fact shrink the size of government and redirect the resources currently used for battling the social ills of unemployment towards the operation of the JG program.

The JG is a “preventative” policy. It is in many ways “cheaper” in real and financial terms than the status quo. In terms of costs, we will do well to focus on the real costs and real benefits from implementing a JG and distinguish them from the financial costs and financial benefits.

#### The plan stabilizes inflation.

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Inflation stabilization: The program serves as a superior inflation control and macroeconomic stabilization tool. Currently the pool of the unemployed fluctuates countercyclically. In the US the amplitudes of those fluctuations are especially large and, for a half century now, growth has delivered “jobless recoveries”. Many of those who are left behind either slip into long-term unemployment, involuntary part-time employment, or drop out of the labor force altogether. Since the JG’s primary objective is to provide jobs to those who want them at all stages of the business cycle, it has an inherent countercyclical mechanism that is superior to current inflation and macroeconomic stabilization methods. The JG expands and contracts with recessions and expansions, never allowing individuals and the economy to suffer the consequences of unemployment. As such it continues to stabilize economic growth and prices, using a pool of employed individuals for the purpose rather than a reserve army of the unemployed. It stabilizes the economy by supporting people, communities, and families, and not by rending them “disposable” as in the current paradigm.

#### If there is inflation empirical evidence shows it will be small.

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Fullwiler, Scott. (2013). The Costs and Benefits of a Job Guarantee: Estimates from a Multicountry Econometric Model. In: Murray, M.J., Forstater, M. (eds) The Job Guarantee. Palgrave Macmillan, New York. https://doi.org/10.1057/9781137297990\_5

Figure 4 shows the program’s effects on inflation relative to the base data. As with Figures 2 and 3, there is an increase during the implementation period; that is, consistent with JG literature, the program appears to create a one-time increase in the price level that temporarily raises inflation, though modestly as the effect peaks at about a 0.6 percent increase over the base level of inflation. Thereafter the effects of the program on inflation are countercyclical—very modest increases in inflation relative to the base level during recessions and similarly modest decreases in inflation relative to the base level toward the peak of expansions. Figure 4 thereby shows that the JG program does not itself create inflation and very modestly contributes to price stability across business cycles.

#### Not inflationary

Philip Lawn 10, Faculty of Social Sciences, Flinders University, “Facilitating the Transition to a Steady-State Economy: Some Macroeconomic Fundamentals,” Ecological Economics, vol. 69, no. 5, 03/2010, pp. 931–936

Having said this, I believe that unemployment is socially destructive. I also believe that long spells of unemployment reduce the productivity of the nation's labour force. People have also questioned how I can achieve full employment in a steady-state economy when GDP growth is considered necessary just to prevent unemployment from escalating. I therefore act as an employer-of-last-resort by introducing a Job Guarantee (Mitchell and Muysken, 2008). The Job Guarantee provides a job for all unemployed people. I need not have to worry about whether I can finance the Job Guarantee, but I do have to think about its potential inflationary effect. I kill off a great deal of the inflationary impact of the Job Guarantee by ensuring that Job Guarantee workers produce useful goods and services. By doing this, my Job Guarantee wage bill closely approximates the value of the goods and services produced, thus ensuring the extra claims on real goods and services closely match the goods and services generated. Because Job Guarantee workers are paid a minimum living wage, I also prevent competition for labour with the private sector whichwould otherwise drive up wages and be inflationary.

Not all unemployed people want full-time work. I design the Job Guarantee so there are fractional jobs available for those who want them. I also provide training and work flexibility. This provides two benefits. Firstly, it forces the hand of many private sector employers to do likewise, thus enabling me to simplify existing industrial relations regulations. Secondly, it enables workers to increase their leisure time by exploiting the increase in their labour productivity. This promotes job sharing that can reduce the full employment level of real GDP. As a consequence, I need not have to pre-occupy myself with having to increase real GDP to achieve full employment.

For good policy reasons, some of the goods and services generated by the Job Guarantee programme will have public goods characteristics. Because most public goods are not sold through a market, it is possible that this element of the Job Guarantee will be inflationary. As we shall see, I may be forced to use taxes to destroy some of your spending power in order to quell the inflationary element of my Job Guarantee spending. Alternatively, and as long as the resultant inflation is not too high, I could simply allow the inflationary pressure to reduce private sector spending. Although this would reduce private sector employment across a range of wage levels, it would be matched by the increase in the number of people employed by the Job Guarantee at the minimum living wage, thereby maintaining full employment. The spillover of labour from the private sector to the Job Guarantee would continue until a non-inflationary ratio of Job Guarantee workers to conventional workers was reached. Stabilisation of the inflation rate would thus arise as a consequence of the newly engaged Job Guarantee workers having less spending power than when they were previously employed at higher, private sector wages (Mitchell and Muysken, 2008). Mainstream macroeconomists would have difficulty objecting to this approach. After all, they recommend a similar strategy that is often referred to as the NAIRU approach to inflation control (NAIRU denotes a ‘non-accelerating inflation rate of unemployment’). It involves reducing aggregate demand through monetary policy settings (i.e., higher interest rates) in order to allow unemployment to rise sufficiently to achieve an inflation-controlling ratio of unemployed labour to conventional workers. In my opinion, the NAIRU approach, which is adopted by almost all central governments, is an insidious means of controlling inflation since it requires the permanent existence of a sacrificial pool of unemployed labour. The Job Guarantee would do away with this unjust and unnecessary policy.

### No Inflation---AT: Admin Costs

#### Admin costs are small.

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The program is designed to use existing administrative structures as much as possible—OneStop Job Centers, nonprofits, and municipalities. As discussed in section VI.5, the program can use the same funding channels, currently used to pay UI. It is further proposed that existing unemployment offices (i.e., One-Stop Job Centers) are converted into genuine repositories for work projects. 37

Since the JG is under a new agency with new program objectives, some additional administrative apparatus will need to be created—a challenge that’s not unique to the JG program, as all essential government programs require administration and management. However, when a person chooses to enroll in the JG, they do not take up some other types of social assistance. Thus any increase in administrative costs of the JG will in part be offset by reduction in administrative costs of other programs. And since we are concerned with the net employment effect of these changes, should the JG produce a net increase in administration and management, it would also mean a net increase in employment.

### No Inflation---AT: Debt Link

#### Who cares about the deficit

Philip Lawn 10, Faculty of Social Sciences, Flinders University, “Facilitating the Transition to a Steady-State Economy: Some Macroeconomic Fundamentals,” Ecological Economics, vol. 69, no. 5, 03/2010, pp. 931–936

Assuming that I have controlled inflation, I may be in a position where my spending has exceeded my taxation. That is, I will be operating a so-called budget deficit. Do I need to borrow (i.e., sell government bonds) to make up the difference? No, for reasons already given. Why might I need to issue government bonds? I do so to enable the central bank to conduct monetary policy on my behalf through interest rate settings. To recall, if I operate a so-called budget deficit, I am injecting more money into the economy through my spending than I am destroying through taxation. Eventually this net injection of money works its way through the economy and into the exchange settlement accounts (ESAs) of the major banks. The ESAs are used by banks to conduct their day-to-day transactions with each other and the central bank. Virtually every banking system in the world works in this manner. Left overnight in ESAs, funds earn a default rate of interest. In Australia, the default rate is 0.25% below the central bank's target cash rate. In many countries, the default rate is zero. Profit-seeking banks seek to offload these funds just prior to the end of each trading day. Competition between the banks drives the cash rate below the target rate set by the central bank. Without a response by the central bank, the cash rate falls to the ESA default rate. This is precisely what happened in Japan in the 1980s where the default rate on ESA funds was zero (i.e., interest rates fell to around 0% despite large central government deficits). To defend the target rate, the central bank sells government bonds to the major banks, thus draining the excess liquidity. What appears as central government borrowing to finance a budget ‘shortfall’ is none other than a means by which the central bank defends the target cash rate when the government operates a so-called budget deficit. This is never taught in standard macroeconomics textbooks.4

Overall, we have a situation where I have taxed the private sector and sold government bonds, yet not one cent of it was undertaken to finance my spending. It was only required to:

• achieve policy goals generally, but facilitate the transition to a steady-state economy specifically;

• quell the inflationary impact of my own spending;

• allow the central bank to conduct monetary policy (i.e., set appropriate interest rates) on my behalf.

4. The Unfortunate, Real Story

What do most central governments do in reality? Apart from persisting with GDP growth without asking if the marginal benefit of growth is greater than its marginal cost, they behave as if they are finance-constrained. They behave as if they need to raise ‘tax revenue’ and/or borrow to pay for their spending. They attempt to run a deficit only during GDP ‘recessed’ times to stimulate spending. They attempt to run surpluses during GDP boom times on the false belief they must accumulate the financial means to deal with a GDP recession. Some of them ‘put aside’ surplus funds (e.g., the Australian Federal Government) on the false belief they need to accumulate the financial means to cope with an aging population.

Over the business cycle, most central governments attempt to run a budget surplus (i.e., ensure total budget surpluses exceed total budget deficits). In doing so, they extinguish some of your net savings, thus increasing your need to borrow to maintain your spending. They also relinquish one of the most effective policy instruments imaginable in a fiat-currency economy. In the end, most central governments tax the private sector for all the wrong and unnecessary reasons. By default, a ‘fiscally conservative’ central government controls the inflationary pressure of its own spending and issues the government bonds to enable the central bank to conduct monetary policy. But almost all of them fail miserably in terms of:

• ensuring the entropic rate of throughput is ecologically sustainable (due to a lack of throughput constraints);

• discouraging ‘bads’, such as resource depletion and waste generation (due to a lack of taxes on bads);

• encouraging the maximum addition of use value to each unit of the incoming resource flow (due to the over-taxing of income and labour);

• ensuring an equitable distribution of wealth and income (due to a lack of personal income limits and a failure to capture the economic rents derived from economic rent-earning assets);

• achieving and maintaining full employment (due to a failure on the part of central governments to act as an employer-of-last-resort);

• promoting the efficient allocation of the incoming resource flow (due to a lack of cost-internalisation policies domestically and espousal of standards-lowering globalisation internationally);

• providing the public goods and infrastructure needed to support a steady-state, low-throughput, high use value-adding economy;

• controlling the nation's money supply to prevent a growing disconnect between the money supply (claims on real goods and services) and the claimable flow of real goods and services entering the market for sale.

In short, all central governments fail to take the necessary steps to initiate the transition to a steady-state economy, not only because of their on-going predilection with continuous growth, but because they fail to use their unique spending and taxation powers in the manner prescribed above.

5. Concluding Remarks

The macroeconomic issue requiring urgent consideration is what should a central government do with its unlimited spending power, its capacity to destroy the spending power of the private sector, and its ability to issue bonds to facilitate the transition to a steady-state economy in a responsible manner? It can, of course, operate like the Zimbabwean Government of recent times or the German Government of the early-1920s and totally destabilise the national economy (both cases demonstrating the unlimited spending power of a central government). On the other hand, it can spend judiciously to provide public goods, critical infrastructure, and maintain full employment; it can use taxation as a policy instrument, which would nullify much of the inflationary impact of its spending; and it can impose whatever additional taxation is required at a desirable interest rate band to completely control inflation, which, as I have argued, would probably lead to lower tax rates on income than is presently the case.

After the central government has used its taxation and bondissuing powers to ensure macroeconomic stability, it matters none what the budget position is. If the central government's budget is in surplus, so be it. The surplus provides no additional spending power to the central government nor additional funds to set aside for an intergenerational fund (if it so chooses) because it already possesses a bottomless pit of money. The only intergenerational fund that matters is the future availability of natural resources and the maintenance of productive capacity. This requires the sustainable use of natural resources and constant investments in physical capital, education, and skills development — the latter of which are reduced by ‘storing funds away’ rather than spending them appropriately now.

If, instead, the central government's budget is in deficit, so be it. The deficit does not reduce the central government's spending power because it possesses a bottomless pit of money. People point to the issuing of government securities as evidence of a central government having to fund any budget shortfall (deficit). This is nonsense. The central bank must issue additional bonds to defend the target cash rate so it can conduct monetary policy on behalf of the central government. This does not require eventual increases in taxes or reduced government spending because the central government can use its bottomless pit of money to pay back bond holders at any time.

Overall, the macroeconomic programme I have briefly suggested in this paper is entirely responsible and disciplined insofar as it stresses the need for central governments to use their spending power wisely as well as use taxation to quell the inflationary effect of its spending. It also stresses that, should a central government be unable to control inflation, it must reconsider the extent and nature of its spending. But it would never have to reconsider its spending from the point of view of its financing capacities, because its financing capacities are unlimited.

I also believe that the programme I have proposed is more responsible than the programmes currently being delivered because, under their present modus operandi of balancing the budget over the business cycle, central governments tax the private sector needlessly, which leaves them with little if any room to use taxation as a policy instrument. They therefore achieve fewer policy objectives. Worse still, they are light-years away from introducing the policies required to facilitate the necessary transition to a steady-state economy.

I have recently presented these ideas to a range of audiences. The three most common responses I get are: (1) a programme of this nature is fiscally irresponsible; (2) there is a need for ‘balance’; and (3) my ideas resemble a ‘free lunch’. I find it strange that people assume irresponsibility at the first mention of a central government's unlimited spending power yet do not make mention of the potential destabilising effect of the financial sector — even more strange given that we are in the midst of a global financial crisis caused by the realisation of the latter. Whilst the creation of money out of nothing and the spending of it by a central government is potentially inflationary, at least a central government has the means (taxation) by which it can nullify the inflationary effect of its spending. It can also direct its spending to guarantee the creation of real goods and services, thus ensuring the extra money it injects via its spending is not chasing fewer goods and services. The same cannot be said of the financial sector.

As for the ‘free lunch’, it is not a free lunch we receive but free ingredients (low entropy matter-energy). The free ingredients we capture are sometimes consumed in their natural form (e.g., fruit), but most are combined in the production process to create ‘lunches’ (real goods and services). We can continue to create lunches – indeed, create better lunches over time (development) – so long as we exploit the ingredients sustainably. On the financial side, and since we operate in a fiat-currency economy, we require a free injection of money (financial assets) as the means by which we can claim goods and services. The only balance required is the need to make sure that the increase in the claims on real goods and services shadow the increase in goods and services made possible by nature's provision of free ingredients. Because the central government is the initial issuer of money, there is no need to balance central government spending with central government taxation. In fact, to balance real goods and services and the financial claims on them, a central government must maintain a cumulative budget deficit (Mitchell and Mosler, 2005).

There are some people who believe that, next to the wheel, money is the greatest of all human inventions. If this is true, then coming in equal first place must be the invention of the budget deficit and the ability of central governments to responsibly generate a deficit without the need to finance the shortfall. Let's hope that one day central governments become aware of this, think more creatively about what they can do with taxation, and fully exploit their fiscal powers to facilitate the much needed transition to a qualitatively-improving steady-state economy.

### No Inflation---AT: Small Business Link

#### Job guarantee wouldn’t cannibalize small businesses.

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Would the Federal Job Guarantee Hurt Small Businesses?

The goal of the FJG is to simultaneously eliminate poverty and unemployment while supporting a robust and inclusive economy—including a small-business sector. The FJG will have adverse effects on small businesses that rely upon low-wage labor. But the magnitude of these effects can be approximated by looking both at the historic data and recent research on the effects of increases in the minimum wage.

Under the FJG program, in 2016, the wage would have been $11.56 plus benefits. An increase of this magnitude would increase the wages of millions of workers—ensuring all the dignity of a decent wage.29 This degree of compensation is not beyond historical trends tracking the magnitude of the minimum wage. During the late 1960s, when we saw peak real values of the minimum wage, the small-business sector did not collapse—nor do we anticipate it doing so under the FJG. Rather, we do anticipate, initially, a redistribution of profits in favor of labor and a modest rise in price levels.30

Recent research on the minimum wage provides additional evidence. Starting with work by David Card and Alan Krueger (1994, 2000), we now have compelling evidence on the employment effects of higher minimum wages. Their approach has been refined and replicated by Arindrajit Dube, William Lester, and Michael Reich (2010). Consistently, these researchers find no evidence of job losses in high-impact sectors from modest increases in the minimum wage.31 However, larger employment effects may take place since the total compensation under the program—inclusive of benefits—amounts to $16 an hour, an amount beyond the scope of existing empirical minimum wage [End Page 58] models (for additional discussion of the minimum wage, see Romich and Hill 2018).

Some employment effects could be overcome by growing evidence indicating that a rise in the minimum wage can reduce job turnover (Dube, Kaplan, and Zipperer 2014) and increase per capita output to the extent that higher wages spur greater productivity (Reich et al. 2016). Reductions in turnover and increases in productivity explain why many small businesses have chosen to invest in higher compensation packages for employees with great success (Ton 2012) and generally support (60 percent) a $12 minimum wage pegged to inflation (Small Business Majority 2015).

Finally, through the FJG, we expect to see a substantial rise in effective demand, as well as investment in infrastructure across the country—boosting sales while driving down transportation and utility costs for small businesses. Furthermore, research has found that in many instances higher minimum wages are associated with superior outcomes for small businesses. A study by the Fiscal Policy Institute analyzed the impact of higher minimum wages on small businesses between 1998 and 2001, finding that small businesses grew twice as fast in states with higher minimum wages—3.1 percent to 1.6 percent (2004).32

Because workers, especially those at the low end of the income distribution, have a higher marginal propensity to consume, we would expect a substantial uptick in sales for businesses and perhaps an uptick in small businesses in currently economically depressed geographical areas. A report by the Chicago Federal Reserve Bank on the impact of spending as a result of a minimum wage increase found every dollar increase in the wage resulted in an annual spending increase of $2,996 (Aaronson, Agarwal, and French 2007).33 Given the robust literature on the minimum wage, we do not believe the FJG will drastically reduce the small businesses sector.

### No Inflation---AT: Spending Link

#### Reduced welfare spending and higher tax revenue offset the costs.

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The JG program is a separate program that pays a living wage. It is not tied to other anti-poverty programs and does not require people to work for their benefits. When a person opts to take the JG job, they will no longer receive unemployment insurance (UI) or other anti-poverty assistance, thereby reducing spending on these programs.

As above, a generous JG program that employs between 11–16 million people at $15 per hour plus benefits will result in a net expenditure of 0.8 percent to 2 percent of GDP (Fullwiler forthcoming). These estimates include expected reductions in spending on other programs such as UI, Medicaid, and earned income tax credits (EITC).

However, these estimates are based on very conservative assumptions regarding potential savings on a wide range of other federal, state, and local programs that are targeted to lowincome households. In 2015, for example, the federal government spent $104 billion on food and nutritional service programs, including $74 billion for the Supplemental Nutrition Assistance Program (SNAP), $21 billion for Child Nutrition, $6 billion for the Women, Infants, and Children program (WIC), $17.3 billion on Temporary Assistance to Needy Families (TANF), $50 billion in housing assistance, and $64 billion on EITC, to name some of the main anti-poverty expenditures. Additionally, total direct spending by states for social services and income maintenance for those on public welfare was $505 billion (this does not include spending on health, policing, or corrections).

Research indicates that most social problems—from homelessness and child malnourishment, to mental and physical health problems, to certain types of crime—are connected in one way or another to unemployment. For example, the average cost of incarceration in the United States is $35,000 per year per inmate, which is slightly below the $37,440 in wages and benefits that the JG provides. In New York State, the cost is $75,000 per inmate—the equivalent of two JG jobs. And in New York City, it is $169,000 per inmate per year, or equal to four-and-a-half livingwage JG jobs. Many of those who are behind bars for economic reasons (i.e., related to the absence of stable well-paid jobs and the associated pathologies unemployment creates) would be better served by taking up a JG job instead. Thus the federal JG program will also be a boon to state finances, causing large-scale savings on incarceration and other anti-poverty measures.

All of these savings are not estimated in the cost calculations above. A more elaborate model will be needed to estimate the reduction in medical expenditures, incarceration costs, and other anti-poverty measures, as well as the positive social multipliers and growth that would result from implementing a JG.

It is conceivable that if we included all social and economic benefits—including reductions in poverty, indebtedness, crime and incarceration, and improvements to physical and mental health—the impact on the federal government budget would be far less (and the positive impact 36 on state budgets would be larger) than what we are reporting in Dantas, Fullwiler, Kelton, Tcherneva, and Wray (forthcoming).

### No Inflation---AT: Taxes Link

#### The program pays for itself in the long run.

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Would Such a Program Be Prohibitively Expensive?

Although the initial financial cost estimated in table 1 may at first glance appear high, the initial costs will be offset by extensive cost savings through reduction of current social insurance programs, many of which would be substantively less necessary, return on investment within the program itself, moderation of economic downturns, expansion of economic capacity, and increases in tax revenues, particularly at the local and state levels. The latter entities frequently are bound by fiscal year constraints to balance their budgets that lead to tremendous cutbacks in the services they provide during economic downturns.

The FJG substantially will reduce the need for the current levels of social insurance programs as individuals become ineligible for benefits such as SNAP after their earnings surpass the designated thresholds. In addition, progressive taxation, as outlined, could be enacted if politicians sought to offset the remainder of the FJG. Because the funding of the FJG will have Keynesian stimulus effects even as it directly provides full employment, we expect that increases in economic production will help reduce net costs further.

#### A jobs guarantee is a counter-cyclical automatic stabilizer. Tax increases and their economic effect would be minimal.

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Pavlina R. Tcherneva, 2018, The Job Guarantee: Design, Jobs, and Implementation, Levy Economics Institute of Bard College, https://www.levyinstitute.org/pubs/wp\_902.pdf

48. Will my taxes go up to fund this program?

No. One novel deign feature of this program is its explicit countercyclical funding mechanism. As section VI.5 of the main text explained, it is essential for the JG to be able to offer jobs on demand at all times, in recessions or expansions. This is necessary not only because it is an employment safety net, but also because it is a key macroeconomic countercyclical stabilizer. Program enrollments swell in recessions and shrink in expansions. It is therefore necessary for the funding mechanism to allow the program’s budget to swell and shrink correspondingly. It is also important to point out that government programs cannot be “prefunded” via tax collections. Program budgets are appropriated ahead of time, allowing the necessary spending to take place. Tax collections are a reflux, after the spending has occurred, and the amount of taxes collected varies with the health of the economy and in precisely the opposite direction to the needs of the program.

In recessions the JG requires increased funding, exactly at a time when tax revenues decline. So raising taxes to prefund the program is not only impossible, but trying to do so will be counterproductive—the income that the government provides to the unemployed needs to be a net injection in the economy, not offset by taking away income somewhere else in the economy. The task is to allow the budget to float. Since the program always spends neither more nor less than what is needed to hire all people who are in need of a job, spending is, in a sense, at the “right” level because it responds to the needs of the economy.

#### Tax increases wouldn’t hurt the economy.

Huang 12 – Chye-Ching, Senior Director of Economic Policy with the Center on Budget and Policy Priorities Federal Fiscal Policy Team, executive director of the Tax Law Center at NYU Law.

Chye-Ching Huang, 4-24-2012, "Recent Studies Find Raising Taxes on High-Income Households Would Not Harm the Economy", Center on Budget and Policy Priorities, https://www.cbpp.org/research/recent-studies-find-raising-taxes-on-high-income-households-would-not-harm-the-economy

Many policymakers and pundits assume that raising federal income taxes on high-income households would have serious adverse consequences for the economy. Yet this belief, which has been subject to extensive research and analysis, does not fare well under scrutiny. As three leading tax economists recently concluded in a comprehensive review of the empirical evidence, “there is no compelling evidence to date of real responses of upper income taxpayers to changes in tax rates.”[1] The literature suggests that if the alternative to raising taxes is larger deficits, then modest tax increases on high-income households would likely be more beneficial for the economy over the long run.

The debate over the economic effects of higher taxes on people with high incomes has focused on a number of issues — how increasing taxes at the top would affect taxable income and revenue as well as the effects on work and labor supply, saving and investment, small businesses, entrepreneurship, and, ultimately, economic growth and jobs. Here is a summary of what the evidence shows.

Taxable income and revenue. Opponents of raising the taxes that high-income households face often point to findings that high-income taxpayers respond to tax-rate increases by reporting less income to the Internal Revenue Service (IRS) as evidence that high marginal tax rates impose significant costs on the economy. However, an importantstudy by tax economists Joel Slemrod and Alan Auerbach found that such reductions in reported income largely reflect timing and other tax avoidance strategies that taxpayers adopt to minimize their taxable income, not changes in real work, savings, and investment behavior. While such strategies entail some economic costs, these costs are relatively modest. Moreover, policymakers can limit high-income taxpayers’ ability to respond to increases in tax rates by engaging in tax avoidance activity — and also enhance the efficiency of the tax code — by broadening the tax base, as discussed below.

Work and labor supply. The evidence shows that changes in tax rates that fall within the ranges that policymakers are debating have little impact on high-income individuals’ decisions regarding how much to work. As Leonard Burman, former head of the Urban-Brookings Tax Policy Center (TPC), recently testified, “Overall, evidence suggests [high-income Americans’] labor supply is insensitive to tax rates.”[2] A marginal rate increase may encourage some taxpayers to work less because the after-tax return to work declines, but some will choose to work more, to maintain a level of after-tax income similar to what they had before the tax increase. The evidence suggests that these two opposing responses largely cancel each other out.

Saving and investment. Some claim that tax increases on high-income people — in particular, increases in capital gains and dividend tax rates — depress private saving rates and investment. But as Professor Joel Slemrod has written, “there is no evidence that links aggregate economic performance to capital gains tax rates.”[3] Similarly, the Congressional Research Service (CRS) has reported that most economists find that reducing capital gains tax rates would have only a small — and possibly negative — impact on saving and investment.[4] Although tax increases on high-income individuals might reduce their saving, if the revenue generated is devoted to deficit reduction, the resulting increase in public saving is likely to more than offset any reduction in private saving. CRS concludes, “Capital gains tax rate increases appear to increase public saving and may have little or no effect on private saving. Consequently, capital gains tax increases likely have a positive overall impact on national saving and investment.”[5]

Small business. The evidence does not support the claim that raising top marginal income tax rates has a heavy impact on small business owners: a recent Treasury analysis finds that only 2.5 percent of small business owners fall into the top two income tax brackets and that these owners receive less than one-third of small business income. Moreover, even those small business owners who would be affected by tax increases on high-income households are unlikely to respond by reducing hiring or new investment. As Tax Policy Center co-director William Gale has noted:[6]

[T]he effective tax rate on small business income is likely to be zero or negative, regardless of small changes in the marginal tax rates. This is for three reasons. First, small businesses can expense (immediately deduct in full) the cost of investment. This alone brings the effective tax rate on new investment to zero, regardless of the statutory rate. Second, if they can finance the investment with debt, the interest payments would be tax deductible, making the effective tax rate negative. Third, they can deduct wage payments in full, so the marginal tax rate should have minimal impact on hiring.

In addition, a review of the research finds little evidence for the common assertion that small businesses are responsible for the majority of job creation in the United States or that tax breaks for small businesses generally — as distinguished from start-up ventures — are effective at stimulating jobs or growth in Gross Domestic Product (GDP).

Entrepreneurship. CRS finds that “An extensive empirical literature on [the relationship between income tax rate increases and business formation] is mixed, but largely suggests that higher tax rates are more likely to encourage, rather than discourage, self-employment.”[7] One reason is that taxes may reduce earnings volatility, with the government bearing some of the risk of a new venture — by allowing tax deductions for losses — and receiving some of the returns. Further, there is little evidence that the current preferential tax rates for capital gains and dividends substantially stimulate investment in new ventures.

Growth and jobs. History shows that higher taxes are compatible with economic growth and job creation: job creation and GDP growth were significantly stronger following the Clinton tax increases than following the Bush tax cuts. Further, the Congressional Budget office (CBO) concludes that letting the Bush-era tax cuts expire on schedule would strengthen long-term economic growth, on balance, if policymakers used the revenue saved to reduce deficits. In other words, any negative impact on economic growth from increasing taxes on high-income people would be more than offset by the positive effects of using the resulting revenue gain to reduce the budget deficit. Tax increases can also be used to fund, or to forestall cuts in, productive public investments in areas that support growth such as public education, basic research, and infrastructure.

These findings from the research literature stand in contrast to assertions of extensive economic damage from increases in tax rates on high-income households, which are repeated so often that many policymakers, journalists, and ordinary citizens may simply assume they are solid and well-established. They are not.

### No Inflation---AT: Labor Supply

#### Unemployment creates constrained supply. By employing the reserve force, the JG drastically expands the pool of qualified labor.

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The Labor Market: A Catch-22 for Many

It is a common view that in a strong economy anyone who looks for work will be able to find it. Any difficulties they might have must therefore be due to some personal shortcoming – a lack of required skills, inadequate education, or poor incentives and decision making. Of course, for most economists “full employment” actually refers to a situation where millions of people are involuntarily out of work (whether through personal failings or not), not to a situation where anyone who is ready, willing, and able to work could actually secure a job.

[FIGURE 2 OMITTED]

In reality, even if one makes all the “right” decisions, the labor market is not a fair game. Even at the peak of an expansion, there are always more jobseekers than there are job openings (Figure 2). For many people the labor market is riddled with paradoxical catch-22 situations. The for-profit sector creates the vast majority of employment opportunities, but it is not in the business of hiring everyone who wants to work. As noted, firms hire staff when their sales and profits justify it, but there are many other reasons (apart from deficient sales) why they never employ all of the unemployed.

First, firms do not like to hire unemployed people, and especially the long-term unemployed.10 They prefer to hire people who are already working or have smaller gaps in their work experience. For the unemployed, this is a catch-22. During the Great Recession, as we noted above, some job ads even warned: “the unemployed need not apply” (a practice that was challenged in US courts).11 Furthermore, firms are reluctant to hire long-term unemployed people because they consider nine months of unemployment to be equivalent to four years of lost work experience.12

For many, the mark of unemployment is their main obstacle to securing a good job. Firms try to avoid the “risk” of hiring and training them, which produces a modern paradox: an economy in which millions are seeking work, while firms fret over finding qualified workers. This paradox is made worse by the fact that, as the economy grows, firms tighten their hiring criteria.13 This means that those who need to find work the most – the long-term unemployed – are precisely those facing the highest barriers to entry. Not only are they hired last and fired first – and so unable to build up sufficient work experience, gain job tenure, or grow their incomes – they are also most likely to be locked out of employment opportunities altogether when employers change the rules of the game. It is another catch-22.

Training and education do not resolve this paradox, though they may shuffle people around on the unemployment line. Over the last few decades, higher education has delivered soaring student loans, but not the jobs and incomes to pay them off. Like a Sisyphean boulder, crushing student debt has meant that young people are not able to afford a home, get married, or retain enough discretionary income, putting the brakes on economic growth. Another catch-22.

Even with training programs private firms have other criteria (visible and invisible) for exclusion. Discrimination on the basis of gender, race, age, and sex are well documented. Stay-at-home parents are about half as likely to receive a second interview as unemployed parents, and only about one-third as likely as employed parents.14 African American applicants without a criminal record are called back with an offer of a job or a second interview less frequently than white applicants with a criminal record.15 People with disabilities are systematically locked out of employment opportunities and have been the last group to see their employment rates reach pre-crisis levels.16

[FIGURE 3 OMITTED]

The Human Yo-Yo Effect

All of these challenges in the labor market, coupled with an economy that regularly lays off millions of people during recessions, have created a human yo-yo effect (Figure 3). Unemployment in the US is extremely volatile: it starts with an avalanche of mass layoffs in recessions, but recoveries are slow and anemic. Jobless recoveries have been accepted as normal and unavoidable. In the meantime, the share of long-term unemployment in total unemployment has steadily risen since the 1960s. Unemployment, in a sense, creates unemployability.

The labor market is a cruel game of musical chairs. In fact it is worse, because many unemployed people cannot find a chair (i.e., paid work), and if they do (especially in the low-wage sectors), they are often discriminated against, harassed, subject to wage theft, and under constant threat of losing their jobs and benefits.

There are not enough jobs, but there are not enough good jobs either. The policy of maintaining a reserve pool of the unemployed, the stacked obstacles the jobless face in the labor market, and the human yo-yo effect of mass layoffs, all inflict high costs on society and the economy.

#### Wage growth is a small part of inflation.

Smith 23 – Talmon, economics reporter for The New York Times

Talmon Smith, 4-7-23, Wages May Not Be Inflation’s Cause, but They’re the Focus of the Cure, https://www.nytimes.com/2023/04/07/business/economy/wages-prices.html

Wages May Not Be Inflation’s Cause, but They’re the Focus of the Cure

As Covid-19 eased its debilitating grip on the U.S. economy two years ago, businesses scrambled to hire. That lifted the pay of the average worker. But as one economic challenge ended, another potential problem emerged.

Many economic analysts feared that a wage-price spiral was forming, with employers trying to recover the higher labor costs by increasing prices, and workers in turn continually ratcheting up their pay to make up for inflation’s erosion of their buying power.

As wages and prices have risen at the fastest pace in decades, however, it has not been an evenly matched back and forth. Inflation has outstripped wage growth for 22 consecutive months, as calculated by economists at J.P. Morgan.

That has prompted economists to debate how much, if at all, pay has driven the current bout of inflation. As recently as November, the Federal Reserve chair, Jerome H. Powell, said at a news conference, “I don’t think wages are the principal story for why prices are going up.”

At the same time, influential voices on Wall Street and in Washington are arguing over whether workers’ earnings growth — which, on average, has already slowed — will need to let up further if inflation is to ease to a rate that policymakers find tolerable.

Wage growth is slowing and is still behind inflation

[[Chat Omitted]]

“We aren’t saying that we’re going to get a wage-price spiral,” said Sonal Desai, a former economics professor at the University of Pittsburgh who is the chief investment officer for Franklin Templeton Fixed Income. “However, wages are high enough that inflation is potentially unstable.”

The annual rate of inflation as measured by the Consumer Price Index, which exceeded 8 percent for a time last year, is lingering near 6 percent. A separate inflation gauge preferred by the Federal Reserve has steadily cooled since last year — but it’s hovering around 5 percent, far above the Fed’s goal of roughly 2 percent.

The labor market is at least indirectly responsible for some share of inflation, since higher income helps people afford necessities and spend on desires. But Omair Sharif, the president of Inflation Insights, a private firm providing research, analysis and forecasts of the Consumer Price Index, said he was “quite skeptical” that wage gains were a primary cause of inflation even in labor-intensive service industries.

Mr. Powell has publicly made the case that the pandemic, the discombobulation of supply chains, war in Ukraine and volatile shifts in consumer spending trends are primarily responsible for price instability.

What is inflation? Inflation is a loss of purchasing power over time, meaning your dollar will not go as far tomorrow as it did today. It is typically expressed as the annual change in prices for everyday goods and services such as food, furniture, apparel, transportation and toys.

What causes inflation? It can be the result of rising consumer demand. But inflation can also rise and fall based on developments that have little to do with economic conditions, such as limited oil production and supply chain problems.

### No Stocks---2AC

#### Stocks aren’t key.

Ivan Illán 21, Award-winning Financial Services Entrepreneur and Bestselling Author, 2-25-21, “Think The Stock Market Is A Leading Economic Indicator? Think Again,” Forbes, https://www.forbes.com/sites/forbesfinancecouncil/2021/02/25/think-the-stock-market-is-a-leading-economic-indicator-think-again/?sh=20f186ee3136

There’s a common belief among financial advisors and sophisticated investors: “The stock market is a leading indicator of where the economy will be in the not too distant future.” In fact, economic and finance courses at universities often teach this. However, there’s a challenge with this understanding because the stock market doesn’t seem connected to any underlying economic frame of reference, especially in the near term. Instead, near-term market gyrations are the product of rapidly changing investor sentiment, which impacts demand to buy or desire to sell shares with its finite stock market supply.

Using data publicly available from the Bureau of Economic Analysis at the U.S. Department of Commerce and subscription available data from Macroeconomic Advisers/IHS Markit, I compared data framed within the two most recent decades (January 1, 2001, to December 31, 2010, and January 1, 2011, to December 31, 2020). These are both interesting decades as they each contain at least one major economic recession and at least one major stock bear market.

To illustrate how perilous using past performance could be, I imagined a “typical investor,” described earlier as someone who uses past performance to make current investment decisions. This investor happens to be waking up with a slight hangover on January 1, 2011, excited to invest in stocks using the cash pile they’ve accumulated in money market funds over the past decade.

In this article, I’ve prepared research looking back at the past two decades of market and economic data to help financial advisors and savvy investors better understand the market-economy dislocation. Furthermore, the reason this is so important is that even though on every investment brochure or prospectus you’ll find a statement along the lines of “Past performance is not indicative of future results,” most typical investors don’t care, in my experience. They proceed doing precisely the thing that, in bold letters, they are told not to do — using past performance to gauge where to allocate their funds.

This research found that from January 1, 2001, to December 31, 2010, the stock market (as measured by the price level return of the S&P index) saw a cumulative –4.74% return (calculation with no dividends reinvested). Although the years included sometimes differ, in professional circles, you commonly hear this decade aptly referred to as “the lost decade” because you’d have done better investing in most any money market fund. Our investor looked at their morning newspaper to select their investment for the decade ahead, using its past decade performance as their decision-making guide. When reading an S&P Index fund’s total return (with dividends reinvested) of 1.41% annualized over the past 10 years, our investor knew immediately that investment was sure to be a loser and decided to stay put in their money market fund. “After all,” they thought, “I have gotten as much total return from my money market fund over the past decade and without all the indigestion from stock market crashes.”

Even though the lost decade soured many investors on U.S. stocks, that same period, my analysis found, witnessed an incredible 144.5% (9.59% annualized) growth rate on U.S. corporate profits. Also, U.S. GDP grew 46.84% (3.91% annualized) during this depressing stock market time frame. Underlying economic dynamics were laying a foundation for future growth but were summarily ignored by many stock market investors. Instead, the crisis du jour captured their attention, and the capital moved accordingly.

In the following decade, between January 1, 2011, and December 31, 2020, my analysis found that the stock market had an annualized total return of 13.87%, or 267% cumulatively. Meanwhile, U.S. corporate profits grew at a comparatively meager annualized rate of 2.49%, and U.S. GDP grew at a lower than previous decade 3.43% annualized rate. To add insult to injury for our investor, money market rates ended the ’10s decade with an average 0.07% annual yield. Understandably, they got misty-eyed and nostalgic for those money market fund yields above 5% nearly 20 years earlier.

Stock market volatility is a normal dynamic. News media and the 24-hour news cycle have fueled frenzied reactions to investors’ euphoric or fearful reactions. Layer in the spreading of ideas through online investing forums, and you have yourself a mighty powerful concoction of supply and demand market dynamics on full display, every day. All this noise distracts and is completely disconnected from underlying economic fundamentals.

The savviest investors understand that investing today takes much more patience and resolve to stay the course as new market participants and their sentiment have rocked global capital markets. As the data presented here suggests, the stock market eventually catches up to underlying economic conditions, so much so that economic conditions today could be indicative of stock market returns for the next several years. But such a conclusion would contradict that today’s stock market prices are any kind of leading indicator; instead, they are a litmus of current feelings about the state of things.

### No Stocks---Not Key

#### Stocks don’t matter

Matt Phillips 20, covers financial markets at the New York Times, “Repeat After Me: The Markets Are Not the Economy (Published 2020),” NYT, 5-10-2020, https://www.nytimes.com/2020/05/10/business/stock-market-economy-coronavirus.html

The stock market looks increasingly divorced from economic reality.

The United States is on the brink of the worst economic collapse since the Hoover administration. Corporate profits have crumpled. More than a million Americans have contracted the coronavirus, and hundreds are dying each day. There is no turnaround in sight.

Yet stocks keep climbing. Even as 20.5 million people lost their jobs in April, the S&P 500 stock index logged its best month in 33 years. After a few weeks of wild swings, the market is down a mere 9.3 percent this year and 13.5 percent from its peak — what most investors would consider a correction. On Friday, after the government released the staggering unemployment figures, the S&P 500 closed up 1.7 percent.

Conventional wisdom would explain the market’s comparatively modest losses this way: Since markets tend to be forward-looking, investors have already accounted for what’s expected to be a cataclysmic drop in second-quarter activity and are forecasting a relatively rapid economic recovery afterward. The Federal Reserve’s actions have also bolstered investors’ confidence that the bottom won’t fall out of the market.

But the pandemic has also highlighted a deeper trend. For decades, the market has been growing increasingly detached from the mainstream of American life, mirroring broad changes in the economy.

“Wall Street has very little to do with Main Street,” said Joachim Klement, a market analyst at Liberum Capital in London. “And less and less so.”

Still, the market retains its grip on the collective imagination. From politicians and corporate executives to mom-and-pop investors, Americans have long relied on the stock market as a proxy for the U.S. economy — for reasons that are partly historical. Its crests suggested bright days ahead, while its troughs suggested a darkening outlook. The current economic fallout, however, could snap any illusions that the logic of the market is derived, in any consistent way, from real-world events.

Part of the reason is the makeup of the stock market, and the fact that the giant companies that make up the S&P 500 operate under very different circumstances than the nation’s small businesses, workers and cities and states. They are highly profitable, hold significant sums of cash and have regular access to public bond markets. They’re far more global than the typical American family firm. (Roughly 40 percent of the revenues of S&P 500 companies come from abroad.)

In 2015, about 600,000 U.S. companies counted at least 20 employees, and only 3,600 of those — or less than 1 percent — were publicly listed, said René Stulz, a professor of finance at Ohio State University, who has studied the changing composition of publicly traded markets.

Because the financial strength of big companies makes them more likely to survive the downturn, their share prices tend to underplay the impact of a widespread economic collapse. In fact, market indexes like the S&P 500 are weighted to reflect the performance of the largest and most profitable companies. In recent weeks, the stocks of such companies have not only veered in the opposite direction of the outlook for the U.S. economy, but from the rest of the stock market itself.

The five largest listed companies — Microsoft, Apple, Amazon, Alphabet and Facebook — have continued to climb this year, as investors bet these behemoths will emerge in an even more dominant position after the crisis. Through the end of April, these companies were up roughly 10 percent this year, while the 495 other companies in the S&P were down 13 percent, according to Goldman Sachs analysts. These highly valued firms — Microsoft, Amazon and Apple are each worth more than $1 trillion — now account for one-fifth of the market value of the index, the highest level in 30 years.

“It’s very easy to get confused by looking at the S&P doing well and that being driven by a relatively small subset of firms which aren’t really affected by this virus and actually gain from it,” said Mr. Stulz.

Nor does the mood of the market necessarily reflect the sentiment of a broad swathe of Americans. While U.S. stock markets are more democratic than most, with more than half of American households owning shares or investment funds like mutual funds, the overwhelming majority of stock accounts are relatively modest. Rather, stock ownership is heavily skewed to the richest segments of the population, who are least likely to feel the pain of an economic downturn.

“Stock ownership among the middle class is pretty minimal,” said Ed Wolff, an economist at New York University who studies the net worth of American families. He added: “The fluctuations in the stock market don’t have much effect on the net worth of middle-class families.”

In fact, a relatively small number of wealthy families own the vast majority of the shares controlled by U.S. households.

The most recent data from the Federal Reserve shows that the wealthiest top 10 percent of American households own about 84 percent of the value of all household stock ownership, according to an analysis by Mr. Wolff. The top 1 percent controlled 40 percent of household stock holdings.

Economists who have studied the performance of stock markets over time say there’s relatively little evidence that economic growth matters to the outcome of the market at all.

“The linkage is actually pretty weak,” said Jay Ritter, a finance professor at the University of Florida who has studied the long-run relationship between economic growth and market returns in world markets. “In the longer run, the relationship is, empirically, it’s not there.”

None of this is a secret. So why do millions of Americans continue to think the market really is a barometer on the economy? That’s more a question of history and culture than economics.

Historians say the stock market’s link in the American psyche to the economic health of the country goes back, at least, to the 1929 crash.

“You can think of the Great Crash as almost traumatizing Americans,” said Janice Traflet, a financial historian at Bucknell University’s Freeman College of Management.

#### No internal link.

Neil Paine and Julia Wolfe 20, Paine is a senior writer for FiveThirtyEight and Wolfe is Senior Editor of Data Visualization at FiveThirtyEight, 6-19-20, “The Economy Is A Mess. So Why Isn’t The Stock Market?,” FiveThirtyEight, https://fivethirtyeight.com/features/the-economy-is-a-mess-so-why-isnt-the-stock-market/

We’ve said it before: The stock market is not the economy.

Usually, this simply means that fluctuations in the markets may have little to no real bearing on the underlying realities we think of as making up the economy. Or that there are many important structural factors that make the markets’ outlook different from how ordinary citizens view the country’s overall economic health.

But now, those usual bromides risk wildly understating the disconnect. In the time of COVID-19, the stock market couldn’t be more divorced from the United States’ broader economic situation. Although the S&P 500 tumbled sharply in March, as the coronavirus shut down large swaths of the economy, it had made back almost all of its losses by the first week of June — before dipping again and then quickly rebounding yet again.

Even beyond the markets, there has been some data to suggest that the worst fears about the economy in late March and April were too pessimistic. (Take May’s jobs report, for instance, which showed a surprising decline in unemployment even after accounting for a classification problem with laid-off workers.) But the overall state of unemployment is still quite bad by historical standards, which mirrors numerous important economic indicators that are almost uniformly down — to a significant degree — from last summer:

Obviously, not every core indicator has dropped off a cliff in the face of this recession. Inflation, as measured by the sticky-price consumer price index (excluding ever-volatile food and energy expenditures), has dipped some since February — from 2.8 percent year-over-year to 2.1 percent — but remains in a relatively normal range. New building permits (a sign of construction investment and activity) have rebounded from an initial dip and are almost back at last year’s level. And measures of credit risk, such as the TED spread, have stabilized, indicating a low implied risk of commercial-bank defaults.

But employment rates, oil prices, consumer confidence and many other measures paint a clear recessionary picture. Even corporate earnings — which in theory help dictate the prices of shares on the market — suffered their worst quarter since 2008. (This is what has driven forward-looking price-earnings ratio forecasts for the S&P skyward.)

And yet stock indices continue to rebound much faster than the rest of the economy.

Why? As is usually the case in economics, it’s complicated — and everyone has a pet theory. A few include the idea that investors are betting on a quick “V-shaped” recovery (rather than the longer, slower “swoosh” shape many economists have predicted) and banking on corporate profits eventually rebounding in the medium and long run. (And why not? The Federal Reserve’s actions have made it clear this is a priority.)

Some prominent tech companies at the top of the market (such as Microsoft, Apple and Alphabet) actually have reason to think the pandemic could shift business in their favor, with so much emphasis placed on digital shopping, communication and entertainment. And the rise of algorithm-based trading has insulated markets somewhat from the shocks that could be created by big news events, such as political developments or the protests against racial injustice currently sweeping across the country, since dispassionate algorithms don’t get worried or scared by the news the way humans do.

But Tara Sinclair, an economics professor at George Washington University and a senior fellow at the Indeed Hiring Lab, told me she thinks the markets are also providing a better place for wealthy people to stash their money than alternatives like bonds or banks.

“People, particularly the rich, have cut back their spending, so they need to park their funds somewhere like the stock market (especially since interest rates are rock bottom),” she said in an email. “Inequality can mean that even with millions out of work, there might still be a glut of funds from the high-earning and/or high-wealth individuals.”

As Paul Krugman of The New York Times pointed out relatively early in the crisis, the yield on Treasury bonds is so low (see the chart above) that stocks are an attractive option — even in the midst of a recession caused by a once-in-a-generation pandemic.

“Recent stock market performance could be more about something like a savings glut rather than optimism on the future value of companies,” Sinclair told me. “It may be more about the S&P 500 being better than anywhere else to put funds rather than about actual optimism.”

That doesn’t necessarily mean there’s no optimism driving investors’ actions, though. “Maybe (hopefully?) people are investing for the longer term and are viewing the current economic situation as substantially temporary,” Sinclair wrote.

And it’s worth noting that, despite everything, the markets are not totally separate from the virus that continues to afflict every corner of the world.

When news of the coronavirus first hit, the VIX — a measure of market volatility perhaps better known as the “fear index” — spiked to 82.7, its highest level ever. (The previous high was 80.9, which it hit in November 2008, when the Great Recession sparked a massive selloff.) News of a COVID-19 resurgence earlier this month caused the VIX to surge to 40.8, another abnormally high number — outside of recessions, the VIX usually floats between 10 and 20. Despite the rising indices, uncertainty rules the stock market right now.

What that means down the line is anybody’s guess. But for now, Wall Street has shown a shocking amount of resilience even as almost every other economic indicator has tanked. If nothing else, let this be the final confirmation that, once and for all, the stock market is not the economy.

#### The Stock Market Is Not The Economy

Ben Casselman 16, senior editor and the chief economics writer for FiveThirtyEight, 1-22-16, “The Stock Market Is Not The Economy,” FiveThirtyEight, https://fivethirtyeight.com/features/the-stock-market-is-not-the-economy/

Last week, I mentioned the Royal Bank of Scotland’s recommendation to “sell everything.” At around noon on Wednesday, investors seemed to be taking the bank’s advice. The Dow Jones Industrial Average was down more than 500 points at one point, and although it bounced back by the close of trading, the late-session rally felt more like a garbage-time touchdown than a genuine comeback. (Markets on Thursday were the mirror image of Wednesday, rising for much of the day and then dropping toward the close.)

My usual approach to writing about the stock market is not to write about the stock market. Markets are important to investors, but despite what it might seem from this week’s banner headlines, the day-to-day moves in the Dow neither drive nor necessarily reflect developments in the economy as a whole. (Longer-run performance is a somewhat different story.)

A 500-point drop is tough to ignore, though. A while back, I laid out some rules for when ordinary people should pay attention to the stock market. The latest downturn hits pretty much all my requirements: It is sustained, is broad-based and extends far beyond the U.S. On Saturday (before this week’s gyrations, but already well into the January slump), Wall Street Journal columnist Justin Lahart wrote that this isn’t a repeat of 2008. That’s probably true, but it’s also not particularly encouraging. The 2008 financial crisis was the start of a catastrophic economic meltdown — things can be not as bad as 2008 and still be very, very bad.

Still, it’s important to keep this week’s news in perspective. One reason markets are getting so much attention right now is because this has been the “worst-ever start of the year,” as commentators (yes, including me) keep reminding us. But as reader Adam White pointed out in a comment on last week’s column, “It’s not like the market resets at the beginning of each year.” Set aside the psychological importance of the New Year and what we’re really talking about is a market that lost 9 percent in 12 trading days (as of the end of Wednesday). That’s hardly unprecedented. We had equally bad 12-day stretches in 1950, 1955, 1957, 1962, 1966, 1970, 1973, 1974, 1978, 1979, 1981, 1987, 1997, 1998, 2000, 2001, 2002, 2008, 2009, 2011 and 2015. That list includes some brutal recessions and memorable crashes, but also several incidents that proved little more than blips. Remember the great crash of September 1998? Don’t be too hard on yourself if you don’t: After plunging 11 percent in 12 days, the S&P 500 rebounded to end the year up nearly 27 percent. (For what it’s worth, the drop was attributed to a financial crisis in Russia.)

#### Stocks are not the economy

Robert J. Samuelson 20, Columnist focusing on economics at the Washington Post covering Economics, 6-12-20, “Opinion: The stock market and economy have parted ways. It’s a FOMO market now.,” Washington Post, https://www.washingtonpost.com/opinions/the-stock-market-and-economy-have-parted-ways-its-a-fomo-market-now/2020/07/12/c14246d8-c2bf-11ea-b4f6-cb39cd8940fb\_story.html

It is impossible not to marvel at the apparently indestructible gap between the buoyant stock market and the less-than-buoyant real economy of workers, companies and jobs. One must say “apparently indestructible,” because maybe there is some simple and obvious explanation that eludes your correspondent. Otherwise, either the stock market is too high, or the economic outlook is too low. One or both must be wrong.

Just last week, the Organization for Economic Cooperation and Development (OECD) — a group of 36 countries — issued its forecast for the United States through 2021. It is unlikely to inspire much cheering. Acknowledging that much depends on the severity of the coronavirus, the OECD report constructs two scenarios: one that might be termed “pessimistic” and a second that is “more pessimistic.”

Under the “pessimistic” assumptions, the unemployment rate is projected at 11.3 percent at the end of 2020 and the economy (gross domestic product) falls 7.3 percent for the year. Both the unemployment rate and the GDP decline are larger than in any previous post-World War II recession. By way of comparison, the peak monthly jobless rate in the Great Recession of 2007-2009 was 10 percent.

The “more pessimistic” forecast assumes that there is a second wave of coronavirus cases. This delays the economy’s recovery and results in more deaths. In the “double-hit” scenario, the year-end unemployment rate is 12.9 percent, and the GDP drops by 8.5 percent. “The recession risks leaving behind a long-lasting negative economic impact,” the OECD warns. “Policies are needed . . . to help workers and businesses avoid scarring effects and fully recover from the crisis.”

Of course, the OECD could be too glum. A new report from the Congressional Budget Office foresees a slightly brighter future. It reckons the GDP decline for 2020 at 5.9 percent and year-end unemployment at 10.5 percent. Hardly a boom. The presidential campaign magnifies the uncertainty. President Trump or former vice president Joe Biden could easily say something that sharply moves the market.

Still, the stock market is clearly overpriced by standard measures. The workhorse of stock valuation is the price/earnings ratio, or PE. The stock’s price is a multiple of its earnings (profits). Suppose a stock sells for $10 a share with earnings of $1 a share. It has a PE of 10.

Historically, the PE for the entire U.S. stock market is about 15. But today’s market PE of roughly 23 is about 50 percent higher than the historic average. All sorts of theories have been advanced to explain these lofty prices. The most popular view involves the Federal Reserve’s policy of holding short-term interest rates near zero and flooding financial markets with money. The idea is that the low interest rates push investors into riskier financial assets, including stocks. Implied (but not yet said openly) is that the Fed might actually buy stocks to prevent a horrific crash.

William Silber, a retired financial historian at New York University, adds an interesting twist to this story. Investors and traders remember what happened in 2008 when Lehman Brothers went bankrupt. The Standard & Poor’s 500 stocks fell by 45 percent by mid-March 2009. “But by the end of 2009, the stock market had recovered almost all its losses,” says Silber. Many investors, he says, vowed not to miss that sort of profit-making opportunity again. When stocks tumble, these investors fortify their positions.

Writing for Project Syndicate, an opinion website, Nobel Prize-winning economist Robert Shiller of Yale University argues that crowd psychology has driven prices up. He divides the current market move into three separate periods: a 3 percent increase from Jan. 30 to Feb. 19; a 34 percent decline from there to March 23; and about a 40 percent rise from the end of March until now.

Once the Fed made clear its determination to foster recovery, “FOMO” — fear of missing out — took over, says Shiller. What happens now is anyone’s guess.

“The stock market and the economy have parted ways,” says Mark Zandi, chief economist for Moody’s Analytics. “I’m not sure what will trigger a sustained sell-off in stocks, but surging [virus] infections and another round of more business closures will be difficult for investors to ignore much longer.”

There are other theories of the market’s disconnect from the real economy. One is the rise of computer-driven trading. Another is the role played by younger traders. Having less market experience than their elders, they may be less risk-averse.

Who knows? The stakes are huge, politically and economically. If the market keeps or increases its value, it could bolster the recovery and Trump’s prospects. And, of course, if the market loses value, it will almost certainly hurt the recovery and help Biden. As always, the market is caught between fear and greed.

#### Not the economy.

Jeff Madrick et al. 20, Senior Fellow at The Century Foundation, Ellie Kaverman is an Intern at The Century Foundation, Andrew Stettner is a Senior Fellow at The Century Foundation, 9-14-20, “The Stock Market Is Not the Economy,” The Century Foundation, https://tcf.org/content/commentary/stock-market-not-economy/?agreed=1

Ellie Kaverman: Jeff, I’d like to start by acknowledging that this conversation is occurring at a critical time. The United States just entered its seventh month of the COVID-19 crisis, and the pandemic has been disastrous for the economy. In August, the stock market had its best month since the early days of the pandemic in April, before a sudden drop in early September. The market’s recent growth paired with the fact that the wealth of U.S. billionaires has increased greatly through this pandemic seems to be in contrast with the experience of everyday Americans: twenty-two million people have filed unemployment claims, lines at food banks have grown longer, and it’s been reported that many children do not to have enough to eat. So what’s going on here? Is the stock market a historically reliable indicator of the strength of the economy?

Jeff Madrick: You’re right to raise these questions, Ellie. The market is often viewed as a rational indicator of the economy now, and of its future. President Trump often touts its successes as proof of the strength of the economy. But this idea that the market is an indicator of the future and closely linked to the real economy is mostly a myth. The market has often been extremely irrational, or else we wouldn’t have crashes. Before a market crash, is it rational to be valuing stocks so high? No. In the days, weeks, months, and even a year before any given crash, the market is actually quite irrational, and it’s not possible to anticipate that coming fall from its behavior. The late 1990s saw a huge run-up in Internet stocks, only to crash in 2000. Similarly, a big run-up in stocks ended in the 2009 market crash. Recessions followed. To say that stocks rationally and accurately reflect the future (as some analysts and even academics insist they do), isn’t just a naïve notion, but a dangerous one as well.

Ellie Kaverman: Why are stocks so high now, when so many people are suffering high unemployment rates and other harsh economic realities?

Jeff Madrick: There are several factors. One of the main reasons that stocks do not reflect the health of the economy most of us experience is the rise of stock buybacks. Companies often push stocks higher, partly and arguably, to raise the value of the stock options of their management by buying them on the open market. The 2018 tax cuts sponsored by Trump led to an inflow of cash for companies, cash that often went to buying back shares. Therefore no link to the economy, but cash sloshing around in company coffers.

But the current stock run-up, which has reached new highs, is first, and most importantly, due to the Federal Reserve injecting massive amounts of stimulus into the banking system. The Fed feared a serious recession when COVID-19 made it apparent that demand by unemployed workers would fall. This showed up in persistently low interest rates, and indeed the interest rates were and remain very low. When interest rates are low, stock prices are often stimulated higher for two reasons, one being because stocks are discounted by the time-value of money (which falls with rates) and the other being that people tend to put money in stocks when interest rates are so low bonds don’t have a serious payout. The Federal Reserve also announced that these unusually low interest rates will likely last for a while. The stock market has got to love that.

Another major factor driving stock prices up is the CARES Act, the government stimulus program which included supplemental unemployment benefits of $600 per week and loans to businesses. That kept the economy from collapsing even further. The stock market viewed these measures optimistically, with the hope that an economic recovery was on the horizon. The problem was that many provisions within the CARES Act were allowed to expire at the end of July, and we don’t know if we will have another stimulus. The Democrats in the House passed the HEROES Act back in May as the next stimulus, while Republicans in the Senate have offered at best a less stimulative package than CARES. Trump, in the meantime, claims the Democrats don’t care about the workers.

We have two factors: the Federal Reserve and the fiscal stimulus.

Ellie Kaverman: Are a handful of stocks carrying the market? If so, how does that fact affect how we read the relationship between the market and the economy?

Jeff Madrick: We know the stock market often doesn’t reflect the economy. But another new factor is that the stock market’s relative stability right now is coming mostly from only one sector: technology. The rises in stock prices is much stronger for technology companies than it is for most other companies. In fact, the disconnect is extremely wide at the moment. It’s not that the economy is doing well: rather, it’s that high-tech companies like Apple, Google, and Microsoft are doing very well. We have roughly five high-tech companies now accounting for 22 percent of the S&P 500. Stocks are going up partly because the stay-at-home economy favors the products and services that these companies offer.

We currently have a bifurcated market. The S&P 500 includes many high-tech stocks, whereas the Dow Jones 30 is actually well below its former high. Is the stock market actually reflecting this “super recovery,” or just the boom in high-tech stocks?

### Recession Coming---1AR

#### Lingering effects of the debt ceiling fight thump.

DePillis 5-20 – Lydia DePillis is a reporter on the Business desk at The New York Times. Ben Casselman writes about economics and other business topics for The New York Times.

Lydia DePillis, Ben Casselman; 5-20-23, Even Flirting With U.S. Default Takes Economic Toll, New York Times, https://www.nytimes.com/2023/05/20/business/economy/debt-limit-default-economy.html

Title: Even Flirting With U.S. Default Takes Economic Toll

Financial markets are still betting that Congress and the White House will strike a deal. But the uncertainty alone is having consequences.

As negotiations over the debt limit continue in Washington and the date on which the U.S. government could be forced to stop paying some bills draws closer, everyone involved has warned that such a default would have catastrophic consequences.

But it might not take a default to damage the U.S. economy.

Even if a deal is struck before the last minute, the long uncertainty could drive up borrowing costs and further destabilize already shaky financial markets. It could lead to a pullback in investment and hiring by businesses when the U.S. economy is already facing elevated risks of a recession, and hamstring the financing of public works projects.

More broadly, the standoff could diminish long-term confidence in the stability of the U.S. financial system, with lasting repercussions.

#### The banking crisis also makes a recession far more likely.

Singh 5-1 – Kavaljit, is the Director of Public Interest Research Centre, New Delhi

Kavaljit Singh, 5-1-2023, "The 2023 US Regional Banking Crisis Is Far From Over", Wire, https://thewire.in/banking/us-regional-banking-crisis-far-from-over

An unfolding crisis

The crisis started on March 8 when Silvergate Capital Corporation, a bank with a concentration on cryptocurrency, declared plans to voluntarily liquidate itself after suffering losses following the collapse of crypto exchange FTX. Two days later, US regulators shut down SVB, a well-known lender to technology start-ups and venture capital firms in the San Francisco Bay Area.

On March 12, New York regulators shut down Signature Bank, which was focused on cryptocurrency customers, in an effort to stem a burgeoning banking crisis sparked by the SVB’s failure. Soon after, First Republic Bank became the focus of the turmoil as panicked customers and investors feared it could be the next bank to fail.

The failed banks had several things in common: they grew quickly using short-term funding before collapsing; their assets were heavily invested in long-dated Treasury bonds and mortgage-backed securities that exposed them to large unrealised losses due to rising interest rates in 2022-23; and they had a large concentration of uninsured deposits and other short-term liabilities that could be withdrawn at a moment’s notice. The asset and liability duration mismatch made these institutions vulnerable to uninsured depositor runs. When uninsured depositors began withdrawing their deposits en masse that led to the failures of these banks.

Nowadays, thanks to online banking and mobile banking apps, it doesn’t take long to withdraw and transfer money from banks. On March 9, customers withdrew $42 billion in a single day from Silicon Valley Bank. The bank failed a day later. While what occurred at SVB was an old-fashioned bank run, the pace of the bank run fueled by social media was unprecedented. Patrick McHenry, the chair of the House Financial Services Committee, described SVB as “the first Twitter-fuelled bank run”.

As banking is a confidence game, US financial regulators feared that widespread bank runs and failures could pose potential systemic risks. They announced an array of measures, including guarantees on all bank deposits of failed institutions, the provision of emergency liquidity, and the swift resolution of troubled banks.

The worst is not yet over

Despite repeated assurances from the US financial regulators that the worst is over and that the banking system is “sound and resilient” after the resolution of the FRB, investor confidence in regional banks remains low. On May 4, shares of two regional banks, PacWest Bancorp and Western Alliance, tumbled 51% and 39%, respectively.

As the Fed has not yet decided to pause its rate hikes, regional banks will continue to face intense pressure from depositors and investors in the coming weeks. Moreover, the equity bases of regional banks are insufficient to sustain significant losses on their security holdings. Reduced deposits and increased funding costs are already hurting regional banks’ profitability and business models.

Another major concern is that the ongoing banking stress will quickly translate into a credit crunch. A severe credit crunch looms large as regional and other lenders have already tightened their lending standards, which will reduce credit availability. The impacts would be immediately felt by small businesses and low-income households, who rely primarily on such banks for credit.

Regional banks may lack brand recognition, but they play a vital role in providing credit to small businesses and the commercial real estate (CRE) sector in the US. They are the main source of financing for office buildings, shopping malls, apartment buildings, and related businesses, which are already struggling due to rising interest rates and the COVID-19 pandemic.

Higher interest rates and the resulting instability in the banking system will drive the US economy into recession sooner than expected. In the best-case scenario, even if there are no more bank runs in the future and confidence in the regional banking space is swiftly restored, its broader effects on the real economy and financial stability would be felt for years.

#### The aggregate probability is near 100%.

Ozyildirim 23 – Ataman, Senior Director of Economics at The Conference Board, PhD in economics from the Pennsylvania State University, Erik Lundh, Principal Economist at The Conference Board

Ataman Ozyildirim Erik Lundh, 4-12-2023, "Probability of US Recession Remains Elevated", Conference Board, https://www.conference-board.org/research/economy-strategy-finance-charts/CoW-Recession-Probability

The most recent recession probability estimates, based on our probability model, remain near 99 percent pointing to the likelihood of a recession in the US within the next 12 months. This is consistent with our view that economic weakness will intensify and spread more widely throughout the US economy over the coming months, leading to a recession starting in mid-2023. While US GDP growth defied expectations in late 2022 and early 2023 data has shown unexpected strength, we continue to forecast that GDP growth to contract for three consecutive quarters starting in Q2 2023. Despite better-than-expected consumer spending recently, the Federal Reserve’s interest rate hikes and tightening monetary policy will lead to a recession in 2023.

Recession probability hovered near zero after the initial phase of the global pandemic from September 2020 to March 2022, but it rose to over 30 percent in April and reached 50 percent in May. This means that the US economy is likely to enter a recession within a year from that point onward. The probability rose further and has remained elevated since then.

### Recession Coming---Inflation High

#### Inflation will remain high even assuming the recent price decline.

Mutikani 23 – Lucia, MSc in Finance and Economic Policy from the University of London, reporter at Reuters.

Lucia Mutikani, 5-10-23, "US annual inflation slows to below 5%, price pressures still strong", Reuters, https://www.reuters.com/markets/us/us-consumer-prices-increase-solidly-april-2023-05-10/

WASHINGTON, May 10 (Reuters) - The annual increase in U.S. consumer prices slowed to below 5% in April for the first time in two years, while a key inflation measure monitored by the Federal Reserve subsided, potentially providing cover for the central bank to pause further interest rate hikes next month.

Nevertheless, inflation remains too strong, with the report from the Labor Department on Wednesday showing monthly consumer prices rising solidly because of sticky rents as well as rebounds in the costs of gasoline and used motor vehicles. The mixed report dashed financial market hopes that the Fed would start cutting rates this year to shore up the economy.

"Today's consumer inflation report supports the case for the Fed to seriously contemplate a pause in rate hikes in June, but does not support any near-term rate cuts," said Scott Anderson, chief economist at Bank of the West in San Francisco.

The Consumer Price Index (CPI) rose 0.4% last month after gaining 0.1% in March. The increase was in line with economists' expectations. Stubbornly high rents accounted for much of the increase in inflation.

#### The rising housing market makes inflation inevitable.

Chen 23 – Rebecca, investment tax certified public accountant at Ernst & Young

Rebecca Chen, 5-10-2023, "The home price rebound could complicate the Fed's efforts to tame inflation", Yahoo Finance, https://finance.yahoo.com/news/the-home-price-rebound-could-complicate-the-feds-efforts-to-tame-inflation-173539314.html?guccounter=1&guce\_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce\_referrer\_sig=AQAAAKr420pWSI00Wkarn6xyrVxH6H\_mJWo1cJwT5YH7nbAJc3wyJblkpnVKpYCElFLr8HOKHUccmoOCtW6CsZfRA9QlZ6z1M9\_0Zius1EFGpNPp4n43GXY-XdYgIUKFLGemp7OpkR89qcjsFXhXTD7JZCOjVQcazeWZ7Vs2LWk2K5dI

The Federal Reserve may have a new problem: The housing market’s recent reversal could keep inflation from coming down as much as the central bank wants.

The latest data shows that more homebuyers are coming into the market, while for-sale inventory continues to shrink. As a result, home prices — which affect a major factor in the government’s inflation measure — have unexpectedly ticked higher month over month since the beginning of the year.

This development could prompt a change in the Fed's course of action, even after it said this week that it plans to take a more wait-and-see approach to future interest rate hikes.

"The hope has been for a while that the rent component and the shelter component of housing, which makes up roughly 40% of the [core] CPI basket, would begin to come down because housing has been slowing down," Torsten Slok, chief economist at Apollo Global Management, told Yahoo Finance. "But the problem is housing is actually beginning to show signs of moving higher."

Housing prices and inflation

Housing costs contribute about a third of the basket for the Consumer Price Index (CPI), the main gauge for inflation, and 40% of the basket for core CPI, which strips out the volatile food and energy components.

#### AND it’ll persist in the long term.

Deshkovich 23 – Vlad, investment analyst at Seeking Alpha

Vlad Deshkovich, 4-25-2023, "Sticky Inflation And Potential Implications For The Retail Sector", Seeking Alpha, https://seekingalpha.com/article/4596327-sticky-inflation-potential-implications-for-retail-sector

Expectations are rising for inflation to remain 'sticky' (persistent) at a higher level (4-5%) for longer than previously thought.

I believe this will constitute a significant pressure on consumers and alter the dynamic within the retail space.

I also believe this will drive a bifurcation of consumers and retail entities into those that are for price-sensitive consumers and those that aren't.

This creates a poor playing field for companies 'caught in the middle', with BBBY perhaps being the first casualty of this ongoing trend.

This creates a more opportune environment for retail firms operating at either extreme; in this article I outline my logic for why I believe this to be the case.

Overview

The discourse around inflation has been consistently changing ever since the Fed tightening cycle began in Q1 2022. Professional prognosticators have sounded off on everything from a 'soft landing' to a 'hard landing' and sometimes even no 'landing' at all. The newest soundbite, and perhaps the most worrisome, is that of 'sticky' inflation. This is to say that expectations are rising for an inflationary environment that will persist for longer than expected.

This phrase is now playing out across headlines with increasing frequency. Publications such as Bloomberg, the Journal, and Reuters have all posted on this topic within the past the last 6 weeks. BlackRock has made clear that they do not see rate cuts happening at all in 2023 due to persistent inflation.

As an alternative indicator of consumer sentiment, we can note that Google Trends is showing an uptick in search queries for this phrase, indicating a level of interest that appears to be approaching 2007 levels.

Of course there is a fundamental basis for this: high inflation has persisted. First-quarter revisions to the New York Federal Reserve's preferred measure, the Multivariate Core Trend, indicated that YoY price inflation was 4.9% for December - a significantly higher result than the initial print of 3.7%. Notably, this metric did not include shelter, a factor that has seen inflation beyond others in recent times.

All of this feeds into the emerging narrative of sticky, persistent, inflation. Investors should take heed that this is a new reality and could be the new normal for years. As long as the Federal Reserve's 2% inflation target remains elusive, we should consider ourselves to be living in - and investing in - an environment that is outside the scope of normalcy.

The New Normal

This new normal could very well see inflation of 4-5% yearly for at least 2 years, if not significantly longer. We should also note that this is occurring against the backdrop of rising rates and tightening credit. If inflation is to persist at those numbers, the Federal Reserve is stuck between a rock and a hard place. Given their core mandate of controlling inflation, they would not be able to readily lower rates as long as inflation remains high.

This could very well result in the much-feared stagflation, a period of slow growth/weak demand coupled with high inflation. However, not all is lost. Consumer spending, as well as the labor market, remain fairly strong. While there is a growing dark cloud of extremely high revolving consumer credit, coupled with sky-high consumer interest rates, the bottom hasn't fallen out just yet. As such, I will leave the stagflation possibility alone for now and simply focus on the implications of a persistently inflationary environment for consumers.

### Ecosystemic Recession---1AR

#### Crossing climate thresholds generates systemic financial risk that makes collapse inevitable because natural capital is non-substitutable. BUT, green transition mitigates their link.

Svartzman et al 21 ( Svartzman Romain, Espagne Etienne, Gauthey Julien, Hadji-Lazaro Paul, Salin Mathilde, Allen Thomas, Berger Joshua, Calas Julien, Godin Antoine, Vallier Antoine "A “Silent Spring” for the Financial System? Exploring Biodiversity-Related Financial Risks in France," https://publications.banque-france.fr/en/silent-spring-financial-system-exploring-biodiversity-related-financial-risks-france 2021)

7 Conclusion This paper has explored the topic of biodiversity-related financial risks (BRFR) in France, bringing three contributions to the emerging literature on this issue. First, we build on previous analytical frameworks aimed at characterizing these risks, with a more detailed discussion of three features: the complexity of ecosystems, including the non-linear patterns that could emerge when tipping points are crossed; the incomparable and incommensurable processes through which ecosystem services can be valued, meaning that there is no ‘fundamental’ value of biodiversity and no ‘true’ definition of the risks related to its loss; the limited substitutability of ‘natural capital’, which could lead to cascading risks that are not yet assessed in the literature. Together, these features indicate that while BRFR are real and may become systemic, exploring them requires developing new methodological approaches.

Second, we provide quantitative estimates of the dependencies of French financial institutions on ecosystem services and of the impacts of French financial institutions on biodiversity. We do so by building on van Toor et al. (2020), while including upstream dependencies. We find that 42% of the market value of securities held by French financial institutions are highly or very highly dependent on at least one ecosystem service (among the 21 considered in this study). We also find that the accumulated (or static) terrestrial biodiversity footprint of the securities held by French financial institutions in 2019 is comparable to the loss of at least 130,000km² of pristine nature, which corresponds to the complete artificialization of 24% of the area of metropolitan France, while the annual additional (or dynamic) impact on terrestrial biodiversity is equivalent to the loss of 4,800km² of ‘untouched’ nature, which corresponds to 48 times the area of Paris. Regarding the aquatic (freshwater) biodiversity footprint of French financial institutions: the accumulated (or static) footprint is comparable with the loss of 9,595km² of ‘pristine’ nature (1.7% of the area of metropolitan France), while the additional (dynamic) footprint each year can be compared to the loss of 92km² of ‘intact’ ecosystems (around the surface area of Paris). However, terrestrial and aquatic footprints cannot be compared without any context (as detailed in Annex 2.E).

These dependencies and impacts can be used to approximate or start assessing (respectively) physical and transition BRFR, and they suggest that the French financial system could be significantly exposed to both. However, more work will be needed to better understand how specifically biodiversity-related hazards could affect financial stability, while accounting for the specific features of such risks (complexity, uncertain valuation processes, and limited substitutability) discussed in this paper.

Third, and as a result of the above, we discuss three avenues for future research to better identify BRFR. These relate to: (i) developing biodiversity-related scenario analysis tailored to financial risk assessment, with more granularity on the nature of the shocks we might face and their transmission channels to economic and financial agents; (ii) applying specific methodological approaches to capture the potential transmission of BRFR across many economic sectors and financial institutions, given the limited or non-substitutability of natural capital and/or the tail risks related to crossing tipping points; and (iii) working with ad hoc conceptual frameworks such as double materiality (already reflected in French regulations), and in particular developing new tools through which the alignment of financial institutions with biodiversity-related goals could be assessed.

Future work could also explore how the risk-based perspective of this paper could be complemented by other approaches that focus on the opportunities provided by an ecological transition. Indeed, the latter could create a number of opportunities (e.g. with respect to jobs (International Labour Organization, 2018; Saget et al., 2020)) and lead to structural economic changes that would transform every single economic sector, thereby rendering risk analysis less robust. It is therefore important to assess how central banks and financial supervisors should act in this context, and in particular how they should coordinate their potential actions with other players (Bolton et al., 2020a).

#### Our turn is short-term because natural capital thresholds will be crossed before global climate ones. Development of green finance outweighs “stranded assets” link.

Chenet et al 22 (Katie Kedward, Josh Ryan-Collins & Hugues Chenet, Biodiversity loss and climate change interactions: financial stability implications for central banks and financial supervisors, Climate Policy, DOI: 10.1080/14693062.2022.2107475)

This oversight becomes even more problematic when considering the differing time horizons of climateand biodiversity-related physical impacts. For example, the ECB expects physical risks to ‘primarily materialise in the medium to long term’ (ECB, 2020, p. 13). Similarly, the NGFS reference scenarios consider that the effects of climate change will adversely affect crop yields only from 2060 onwards (NGFS, 2020b; NGFS and INSPIRE, 2021). Yet it is increasingly acknowledged that agriculture is also exposed to shorter-term biodiversityrelated physical risks, such as pollinator loss and soil erosion (Garibaldi et al., 2011; IPBES, 2016; Sartori et al., 2019) that may have financial impacts in the nearer term. Additionally, at the regional scale, several critical biomes involving tropical rainforests and coral reefs are considered to be rapidly approaching ‘tipping points’ (Lovejoy & Nobre, 2019; Schellnhuber et al., 2016; Staal et al., 2020; van Hooidonk et al., 2016). Tipping dynamics are also relevant to climate change (Lenton, 2013; Steffen et al., 2015). The presence of these non-linear dynamics suggest that some environmental-financial risks may materialise in the nearer term. As we discuss further in Section 3, this implies a trade-off between knowledge-building and policy intervention that is at present underappreciated by financial policymakers.

Climate change and biodiversity loss are also interconnected from a transition risks perspective, sharing common anthropogenic drivers of change. Yet the integrated assessment models (IAMs), which underpin the scenario risk modelling methodologies used by central banks, primarily focus on greenhouse gas (GHG) emitting sectors as the main sources of transition risk (e.g. using shadow carbon prices to proxy for the intensity of climate mitigation actions) (Ghersi et al., 2021; Hansen, 2022; Svartzman et al., 2021b). More recent studies have explored actions to mitigate the loss of biodiversity, focusing on the transition risks associated with the post-2020 Global Biodiversity Framework’s proposed target to conserve 30% of the earth’s surface (Waldron et al., 2020), or nitrogen-intensive fertiliser use (Van Toor et al., 2020). In general, however, the interactions between climate-related and biodiversity-related transition risks remain under-researched. By focusing on these risks in isolation, policymakers may be failing to account for the fact that actions designed to mitigate various environmental problems are not necessarily mutually supportive.

Figure 2 visualises where trade-offs and synergies between biodiversity and climate solutions may emerge. In the top left quadrant are some examples of climate mitigation activities that may have negative consequences for biodiversity. For example, several studies have shown that the land use change implied by low emission scenarios relying on bioenergy crops may have severe impacts upon biodiversity (Hof et al., 2018; Immerzeel et al., 2014; Tarr et al., 2017).5 If policy actions to protect biodiversity become more developed and widespread – as is the ambition following the forthcoming COP15 Biodiversity Conference – the climate mitigation activities in the top-left quadrant may become subject to biodiversity-related transition risks that are at present unaccounted for in environmental-financial risk analysis

In other sectors – depicted in the bottom-left quadrant of Figure 2 – negative climate impacts are well-established, but there has been insufficient focus by financial actors on other sources of transition risk. The emissions associated with mining and real estate, for example, are well known but are considered largely abatable through electrification. Yet, these sectors may face additional and potentially significant financial risks should targets such as those proposed in the post-2020 draft Global Biodiversity Framework be enacted. The target to conserve 30% of land and sea areas globally, for example, could create stranded mining and infrastructure assets as conservation policies restrict development across certain ecosystems (Caldecott et al., 2013; Waldron et al., 2020). The bottom-left quadrant hence depicts where current efforts to understand transition risks may be significant underestimations

Conversely, there are also important synergies to be gained from climate mitigation activities that are also protective or restorative for ecosystems, such as the ‘nature-based solutions’ shown in the top-right quadrant (IPBES and IPCC, 2021; Smith et al., 2019), which has implications for the appropriate definition and design of green financial instruments (Deutz et al., 2020; The Nature Conservancy, 2019). Indeed, an IPBES-IPCC joint report on climate and biodiversity found that ‘on balance, the evidence suggests more mutually synergistic benefits than antagonistic trade-offs between conservation actions and [climate] mitigation objectives’ (2021, p. 20). One exception – depicted in the bottom right quadrant – might be the negative impacts on GHG emissions of ‘ecotourism’, which has been proposed as one type of market-based mechanism for funding conservation efforts (Deutz et al., 2020), given that tourism today accounts for around 8% of global emissions (Lenzen et al., 2018). Overall, the precise dynamics of potential climate–biodiversity trade-offs and synergies from a financial risk perspective are not well-established and remain in need of further research.

#### Ecological crisis turns “uncertainty” and causes inflation and debt crisis.

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As noted in Part 3.I., re/insurance companies invest in a large array of financial products and the financial returns of the investment portfolio depend on the type and the performance of the underlying assets. The investment activities of re/insurance companies are similar to other financial institutions, therefore the biodiversity-related financial risks for the investment arms are similar as those described in Part 2. IV. Financial Institutions.

The investment arm of a re/insurer can invest in debt or equity linked to governments or corporates, but also to infrastructure and real estate. Biodiversity-related transmitted risks for the investing activities comprise the physical and transition risks that can impact the investees and consequently undermine the financial returns for the investor, in this case the re/insurer.

The financial valuation of these financial products is subject to volatility partly due to their exposure to physical or transition environmental risks, which depend on their geographic location, economic sector, dependencies and impacts on biodiversity. The disruption of ecosystems, with the services and goods they provide, will lead to greater volatility and uncertainty for businesses (Part 2.III. Businesses) and the financial institutions invested in them (Part 2.IV. Financial Institutions). The uncertainty for businesses can lead to adverse financial yields for financial institutions, through declines in stock prices, real-estate prices and credit defaults, but also reputational damages and regulatory changes which could impact their financial performance.

The investment activities of re/insurers are exposed to transmitted risks via the exposure of the underlying entities of the financial products they invest in. Both physical and transition risks influence the performance of financial assets:

Re/insurers face exposure to credit risk due to their high level of investment in fixed income, such as corporate and government bonds or real-estate debt. The depletion of natural assets can impact investees’ business operations and profitability (see Part 2. III.), increasing their risk of default. The same is true for real-estate, where cash flows can be impacted by high exposure to natural catastrophes. This can reduce the debt-servicing capacity and collateral valuation of the financial institution. Investees can also endure financial losses because of sanctions or new taxes related to environmental regulations. The cost of capital can also increase due to higher lending requirements. All these dynamics can result in a decrease in the expected financial yield for the re/insurer.

— Re/insurers also face exposure to market risk when changes in natural stocks impact share prices. The disruption of ecosystems can influence macroeconomic factors of growth, inflation and the overall stability of the impacted economic sectors, leading to an adverse effect on market prices and on financial returns. Market shifts can also occur due to actions taken to reduce pressure on biodiversity, whether intentional or regulated, with as a result the repricing of certain assets and loss of investment opportunities.

#### Prioritizing exploitation for short-term economic gain is a ratchet that produces long-term collapse.

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Resource Overexploitation and Perceived Loss

Historically, any newly identified resource is inevitably overexploited, often to the point of collapse or extinction. Its overexploitation is based, first, on the perceived rights or entitlement of the exploiter to get his or her share before someone else does and, second, on the right or entitlement to protect his or her economic investment. There is more to it than this, however, because the concept of a healthy capitalistic system is one that is ever growing, ever expanding. But such a system is not biologically sustainable. With natural resources, such non-sustainable exploitation creates a “ratchet effect,” where to ratchet means to constantly, albeit unevenly, increase the rate of exploitation of a resource.37

The ratchet effect works as follows: During periods of relative economic stability, the rate of harvest of a given renewable resource, say timber or salmon, tends to stabilize at a level that economic theory predicts can be sustained through some scale of time. Such levels, however, are almost always excessive, because economists take existing unknown and unpredictable ecological variables and convert them, in theory at least, into known and predictable economic constants in order to better calculate the expected return on a given investment from a sustained harvest.38

Then comes a sequence of good years in the market, or in the availability of the resource, or both, and additional capital investments are encouraged in harvesting and processing because competitive economic growth is the root of capitalism. When conditions return to normal or even below normal, however, the industry, having over-invested, appeals to the government for help because substantial economic capital, and often jobs, are at stake. The government typically responds with direct or indirect subsidies, which only encourage continual over-harvesting.

The ratchet effect is thus caused by unrestrained economic investment to increase short- term yields in good times and strong opposition to losing those yields in bad times. This opposition to losing yields means there is great resistance to using a resource in a biologically sustainable manner because there is no predictability in yields and no guarantee of yield increases in the foreseeable future. In addition, our linear, economic models of ever-increasing yield are built on the assumption that we can, in fact, have an economically sustained yield. This contrived concept fails in the face of the biological limits of a yield’s sustainability.

Then, because there is no mechanism in our linear, economic models of ever-increasing yield that allows for the uncertainties of ecological cycles and variability or for the inevitable decreases in yield during bad times, the long-term outcome is a heavily subsidized industry. Such an industry continually over-harvests the resource on an artificially created, sustained-yield basis that is not biologically sustainable.39

### Ecosystemic Recession---Warming

#### Warming turns growth.

--DICE is Nordhaus’s model

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This research note features a high-level approach to explore if global warming can cause a global recession. It makes use of the standard framework in which climate-related effects aggregate in a so-called damage function, a simplified formulation of economic damage relative to a baseline scenario in which the Earth’s climate is kept unchanged.

The damage functions we consider here are additive, continuous piecewise linear functions applied to the world GDP annual growth rate rather than more current multiplicative, polynomial functions, applied on the GDP total level. This is not only because we focus on the effects on growth, but also because there is growing empirical evidence that temperature does affect economic growth.

In order to reconcile small impacts of moderate warming with potential catastrophic changes expected for extreme levels of warming, we propose two alternative calibrations, each based on two existing studies. In both cases, the work of Burke et al. is used for limited temperature rise, as it extrapolates the effect of average annual temperature variations on the growth of GDP into the future. For higher warming levels, the two alternative calibrations we use are extensions of the famous DICE model taking account of possible tipping points in the climate system.

The combination of these three existing studies results in two alternative models, BW and BDS. They provide constraints that we believe are more plausible than previous studies known to have a downward bias5,8,18, albeit the three studies we use have also been criticised for being too pessimistic23,33.

However, using more optimistic estimates like DICE, would make little sense here, precisely because they assume by construction that the growth rate of the global economy is virtually never reduced by climate change.Breakpoints are created by the connection of calibrations based on distinct warming levels. They correspond to temperature increases of 3.1°C for BDS and 5.2°C for BW. Interestingly, these values are typically in the range where abrupt and irreversible changes in the climate system have a high risk of happening14.

When such tipping points are reached, damage increases all of a sudden, and it seems that a recession is bound to follow shortly afterwards, whatever the baseline growth level. In SSP3-7.0, the global average temperature is 4°C above preindustrial levels in 2100. By this time, the BW model gives a slightly positive growth value (+0.2%) while the more pessimistic BDS model shows a possible recession starting several decades before, around 2075.

Our BW and BDS models show that growth could also be significantly hampered before reaching tipping points. For instance, the world average annual growth rate in 2100 may be half the baseline level in SSP4-3.4, i.e., 0.3% instead of 0.6%, even if global warming is limited around 2°C.

Unlike classic shock models that expect the economy to rapidly recover after a limited period of negative growth, climate-related damage worsens as temperature increases, making a rapid offset of their adverse effects less likely. As a consequence, a climate-driven recession may greatly differ from past economic crises. This emphasises that quickly addressing climate change could not only preserve the total level of economic output compared to a baseline scenario, but also prevent the world from entering a deep, structural economic recession.

### Ecosystemic Recession---AT: GNP

#### Indicators of economic well-being are wrong because they convert ecosystem services to constants.

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Yet we, as a society, listen to the world’s traditional economists, corporate lawyers, and the political elite and assume they are correct when they take such ecological variables as air, soil, water, sunlight, biodiversity, genetic diversity, and climate and convert them—in theory at least—into economic/political constants whose values are unchanging, or discount them altogether as “externalities.” Ecological variables are therefore omitted from consideration in most economic and planning models and even from our thinking—to say nothing of the decisions rendered by today’s legal professionals. Biodiversity and genetic diversity, on the other hand, are euphemistically discounted as “externalities” when their consideration interferes with monetary profits.6

Nevertheless, the relationships among things are in constant flux, as complex systems arise from subatomic and atomic particles in the giant process of evolution on Earth. Moreover, a system’s functional dynamics are characterized by their diversity, as well as by the constraints of the overarching laws and subordinate laws that govern them.

These laws can be said to govern the world and our place in it because they form the behavioral constraints without which nothing could function in an orderly manner. In this sense, Nature’s Laws of Reciprocity inform society of the latitude whereby it can cooperate with Nature and survive in a sustainable manner. Beyond that, the global ecosystem will always function in a manner sustainable unto itself based on Nature’s inviolable Laws of Reciprocity, but not necessarily in a way that is favorable to human survival, let alone a human life of well-being and dignity—despite the assumed sanctity of the legal system. “Inviolable” means that we can manipulate the effects of a law through our decisions and subsequent actions, but we do not—and cannot—control the functional effect of the law itself.

# CPs

## AT: ADV CPs

### Carbon Pricing CP---2AC

#### Emissions restrictions fail:

#### a) Coordination failures and empirics.

Magdalena Raftowicz 21, Wrocław University of Environmental and Life Sciences, Institute of Economic Sciences, “The Climate Crisis as a Product of Globalization,” SHS Web of Conferences, vol. 92, EDP Sciences, 2021, ProQuest, doi:http://dx.doi.org/10.1051/shsconf/20219206029

1 Introduction

The beginning of the 21st century introduced a new chapter into the global economy - the climate crisis. This process is a consequence of the rapid economic growth already initiated by the industrial revolution in the 18th century. On the one hand, this revolution became a driving force for the development of industry, agriculture, transport, trade and urban planning, but on the other hand, it contributed to overloading the natural environmental systems of our planet. These processes have particularly intensified since the end of the 20th century, which dates back to the period of rapid globalization [1], when individual countries were becoming more and more open to forces influencing them from the outside of their borders, thus leading to interdependence and integration at the level of states and societies, cultures, as well as economies.

The main aim of the paper is an attempt to answer the question: what is the impact of unlimited globalization processes on the climate crisis and what actions should be taken to stop this crisis. The research is based on critical studies of the literature on climate change analysed through the prism of economic issues.

2 Climate crisis

Nowadays, we can distinguish nine barriers to the development of our planet (the first two of which have long been exceeded). These include, according to the scale of the problem [2]:

1. Climate change (climate warming)

2. Loss of biodiversity,

3. Excessive level of agricultural land use,

4. Water consumption,

5. Acidification of the oceans,

6. Exceeding the levels of phosphorus use,

7. Depletion of the ozone layer,

8. Exceeding nitrogen use levels,

9. Aerosol concentration and chemical contamination.

Among these factors, the greatest threat is the climate change, which is adversely affected by the remaining eight elements whose indicators keep constantly increasing. To this set of climate change causes, the European Commission [3] also adds burning of fossil fuels, cutting down rainforests and raising livestock. The scale of the global waste of resources (as well as their constantly deepening deficit), both renewable and non-renewable due to excessive consumption, causes concern. It is predicted that by 2020 in the new EU countries the consumption of resources will increase by over 60%, to the level of almost 1.7 billion tons.

Unfortunately, the current global policy to combat climate change has turned out to be ineffective. A clear example is the increase in global greenhouse gas emissions by 30-40% in 1990-2009 - despite the assumed decrease [4]. In the longer term, new investments in the extraction of fossil fuels of USD 22.87 trillion are planned by 2035, with a simultaneous investment in renewable, hydro and nuclear energy of only USD 7.32 trillion. By confronting this data with the calculations of M.Z. Jacobson and M.A. Delucchi [5] from 2009, who showed that it would be possible (both economically and technically) to convert the world to renewable energy in 2030 at the cost of USD 100 trillion, it may undermine the further sense of the research on the sustainable development concept, which implies care for future generations, in a way as it is done these days. All the more reason, the estimated value of the oil reserves is only USD 50 trillion.

Established in 2010, the Green Climate Fund, which was intended to raise USD 100 billion for third world countries for adaptation to climate change, had collected less than USD 1 billion by 2016 and a total of just USD 5.3 billion four years later [6]. This means that the most developed countries in the world are quite reluctant to allocate funds to common environmental goals. Moreover, scientists have calculated that the signing of the Intended Nationally Determined Contributions on a voluntary commitment to reducing greenhouse gas emissions and adapting to climate change by the signatories of the Paris Agreement does not solve the problem, as there still is a 90% probability of an increase in global temperature above 2°C, until 2100 [7]. In the face of such threats, the question arises whether there is a real possibility of reversing or eliminating these negative statistics? The answer to this question lies behind the concept of globalization.

3 Globalization

In the literature on the subject, there are many definitions of globalization that relate to both aspects of trade and financial integration [8]. In general, it can be assumed that globalization is a socio-economic process that represents economic phenomena in the worldwide. Apart from the unquestionable enormity of positive benefits resulting from globalization (e.g. increased exports, increased employment, access to technologies, products and services) [9], the processes of globalization also have their negative features. The most dangerous is the fact that, unlike other economic and organizational processes, globalization has now eluded the possibility of its top-down control.

Focusing in this article only on the aspect of nature protection in the context of climate change, it can be concluded that free market globalization deprives local and regional communities of control over their environment, incapacitating them against the powerful forces of international capital. Transnational corporations externalize the costs of producing cheap goods, reaping huge profits, and transferring most of the harmful side effects of production to local communities (including employees) and the environment, which results, for example, in the problem of smog, which occurs only locally. Globalization also facilitates offshoring, i.e. the transfer of production abroad, thus lowering the costs of transport, communication, and customs [10]. Thus, globalization favours the creation of the dirty industry migration effect (pollution heaven hypothesis) from developed countries to low-income countries, where the costs of environmental pollution are significantly lower. This means that globalization should be considered from the perspective of abuses of the system and acknowledged that climate change is a specific product of globalization. This is due to the fact that today we are dealing with the process of unlimited globalization, which further stimulates unlimited economic growth and thus accelerates climate change. The question is, can globalization be controlled to counteract climate change?

Many scientists (and fairly) believe that today we are dealing with a situation in which markets strive for globalization, while the institutions needed to support them remain mostly national [11]. Referring to Rodrik's paradox of globalization, which suggests that in the world of economics, the issues of globalization, democracy and sovereignty cannot be combined, we can conclude that concern for environmental protection also excludes the neo-liberal cult of economic growth and thus globalization. A clear example of this is the introduction of an unprecedented tool- permits for the greenhouse gas emissions trading, which, however, did not revolutionize the status quo of climate policy. Therefore, it can be argued that in the era of financialization (i.e. the domination of the financial sector in general economic activity [12]), the issue of environmental pollution becomes a bargaining object, and the right to poison - a lucrative business.

In the wake of the lack of real changes, more and more researchers assess climate policy as ineffective, devoid of effective tools or institutional solutions. This thesis is confirmed by the fact that, paradoxically, the most developed countries in the world, which derive the greatest benefits from the process of uncontrolled globalization, do not always fully accept, and thus implement policies to counteract climate change. An example is the United States - the biggest opponent of the Kyoto Protocol, which concerned the reduction of greenhouse gases, or Canada, which "left Kyoto" in 2011. A similar situation took place during the Paris conference, when the United States withdrew from the agreement in July 2017. It has been calculated that the United States, whose economy is based on high gas emissions, would suffer only slightly in the initial stage of global warming compared to the enormous costs that the US would have to bear to fight the climate crisis, which shows how shortsighted the political vision of the rulers is.

In the Era of Consequences report by the US Center for Strategic and International Studies (CSIS), experts warn that climate change could bring an end to globalization [13]. So what should be done? The solution to this problem can be seen in the implementation of the degrowth model, combined with effective supra-state regulations.

#### b) Enforcement failures

Umberto Mario Sconfienza 20, Goethe University Frankfurt, “Incomplete Ecological Futures,” World Futures, vol. 76, no. 1, Routledge, 01/02/2020, pp. 17–38

After problems. Humanity might still find itself slipping through the cracks of its policy solutions. In order to operate within the safe operating space of the Earth (Rockstrom, 2009), our socio-economic system needs to either degrow or find ways to technologically expand ecological boundaries, or pursue a mixture of the two strategies. The risk of the latter option – the one linked to the theory of a-growth and Policy Reform – is that the two strategies are, to a large extent, incompatible. Degrowth strategies are premised on ethical norms which roundly reject the tinkering with the Earth’s climate and the commodification of natural resources. While it is not impossible to envisage a future in which geoengineering is deployed safely and widespread nonconsumerist values drive down global consumption, it is also possible that their clashing normative presuppositions, along with the polarization of environmental politics in the public debate, drive the two strategies further away. This would prevent that either strategy be pursued with the necessary level of ambition. Humanity might find itself drifting into unsustainability and social stress as a result of inadequate technological progress and insufficient degrowth.

### Carbon Pricing CP---Enforcement

#### Meaningful policy measures would be circumvented without the aff’s mindset shift.

Umberto Mario Sconfienza 20, Goethe University Frankfurt, “Incomplete Ecological Futures,” World Futures, vol. 76, no. 1, Routledge, 01/02/2020, pp. 17–38

The a-growth theory put forward by van den Bergh prescribes that an ambitious package of policy reforms should be implemented to ensure strict environmental protection: ending subsidies to fossil fuels, scaling up renewables, taxing polluting substances and activities, and putting in place a widespread cap-and-trade mechanism. This set of policy proposals is derived from the idea that social welfare should be primarily pursued, irrespective of whether it causes GDP growth or contraction. The proposed policy solutions would not alter, at least initially, the wider architecture of our socio-economic system (that is why the associated scenario, Policy Reform, is considered a Conventional world) and, even with a steep price on carbon, lifestyle changes, and without fossil fuel subsidies, we are likely to commit ourselves to some form of dangerous global warming in the future (van Vuuren et al., 2018). This is why technological solutions, in the form of geoengineering and development of clean energy, remain needed, along with some form of values and behavior change.

Before problems. The enormous political and economic clout of market actors with a vested interest in perpetuating the status quo is the most problematic aspect of this proposal. The risk that powerful vested interests might prevent effective policy solutions to be implemented is compounded by the fact that the a-growth theory remains rooted in the current understanding of politics and economics, from which powerful market actors profit. Similarly to the theory underlying the narrative of sustainable development currently informing environmental politics, the a-growth theory put forward by van den Bergh subscribes to an economic understanding of the world in which the social reality and the ontology of economics (prices, preferences, individuals, firms, etc.) match. Current environmental politics is premised on an understanding of environmental problems as market failures. Caps, taxes, and incentives are all instruments devised to address this undesired event. Yet, none of these instruments have prevented market actors from successfully pushing their polluting agenda. Market actors have an array of techniques to achieve this goal: framing climate change and environmental problems as risks, and thus susceptible to be addressed with the usual risk management tools already available to them (Wright & Nyberg, 2015), sponsoring research which fuels climate change skepticism (Oreskes & Conway, 2010), and lobbying and campaign contributions (Christiano, 2012). Powerful vested interests have so far prevented more modest policy solutions to be implemented than those proposed by van den Bergh. It is difficult to see how this might change without first a deep refashioning of our values and behavior, which seems to be excluded both by van den Bergh and by the Policy Reform scenario.

#### Meaningful carbon pricing will be blocked by growth-oriented politics.

Kallis et al. 20, Giorgos Kallis is an ICREA professor at ICTAUAB, where he teaches ecological economics and political ecology; Susan Paulson, based at the University of Florida, studies and teaches about gender, class, and ethnoracial systems interacting with bodies and environments; Giacomo D’Alisa is based at CES-UC in Coimbra, Portugal; Federico Demaria is a lecturer in ecological economics and political ecology at the University of Barcelona, part of the Environmental Justice Atlas team that studies and maps environmental conflicts and injustices around the world, “Frequently Asked Questions,” The Case for Degrowth, Polity Press, 2020, pp. 110-129

5) Isn’t it just a matter of getting the prices right?

Polluters should pay for polluting, yes. But there is no “right price” determined by the market.10 Resources and carbon should be taxed at levels sufficiently high for the reductions needed. Taxing a ton of carbon at anything from $100 to $5,000 by 2030 compared to just $8 today (the high range of a tax some scientists deem necessary for stopping climate change) would practically prohibit oil and coal. This could slow down the economy, which is fine. But this is also why the powers that be do not allow it to happen. Growth rests on cheapness. The problem is that if polluters have to pay too much, polluting industries will use their political and economic power to try to stop the charges. So the challenge is less about getting the markets or the prices right, as about leveraging the political power to do so.

### Geoengineering CP---2AC

#### Geoengineering fails, exacerbates other environmental crises, causes global war and temperature snap-back from lapses

Umberto Mario Sconfienza 20, Goethe University Frankfurt, “Incomplete Ecological Futures,” World Futures, vol. 76, no. 1, Routledge, 01/02/2020, pp. 17–38

The strategy of growing the economy first and then wait for people who have developed green preferences to build government capacity for stricter environmental regulations is not effective: the process is too slow, it happens at the expenses of other countries (Moran, Lenzen, Kanemoto, & Geschke, 2013), and, presently, it cannot be squared with the continuous pursuit of economic growth (Jackson, 2009; Ward et al., 2016). For these reasons, the kind of policy strategy compatible with continuous economic growth has to rely on technological solutions to expand humanity’s ecological boundaries. From today’s vantage point, geoengineering is poised to quickly become the preferred technological solution for market actors with a stake in pollution and technocratic elites profiting from the status quo. This alliance around geoengineering has started to become visible during COP21 and is reflected in the Paris Agreement, which formally left the door open to the deployment of geoengineering technologies to achieve the goal of staying below 2 C of global warming compared to pre-industrial level (Anderson, 2015).

Before problems. One of the major problems of the geoengineering strategy is the difficulty of reaching an international agreement on geoengineering research and deployment before ecological circumstances make geoengineering necessary. According to a standard categorization (Royal Society (Great Britain), 2009), there are two types of geoengineering: Negative Emissions Technologies (NET) remove carbon emissions from the atmosphere, Solar Radiation Management (SRM) alter the reflectivity of the Earth to cool the planet. Both options, to be effective, require a planetary-scale implementation and involve huge risks. If this is the road humanity thinks it should pursue, then an adequate global agreement which settles issues of ethics and governance must be reached. Without an agreed blueprint for action at the international level, early unilateral action by states, corporations, or, even, wealthy individuals, will likely lead to conflict and social tensions to the point of compromising future collective efforts and plunging humanity further into chaos. Speaking specifically of SRM, Szerszynski, Kearnes, Macnaghten, Owen, and Stilgoe (2013) find that it is an “inherently political technology” (Winner, 1980), which is incompatible with liberal democracy.

After problems. The unlikelihood of a global agreement on geoengineering is also underscored by the different perceptions of the states – informed, in turn, by different values, beliefs, and rationally formed priorities – of the consequences which might occur once geoengineering has been implemented on a planetary scale. In particular, the large deployment of BECCS, quite popular because it appears in 184 out of the 204 scenarios assessed by Intergovernmental Panel on Climate Change (IPCC, 2014) which meet the 2 C target, is not fully understood in theory, much less tested in practice (only a handful of small facilities around the world currently exist). According to Williamson (2016) and Burns and Nicholson (2017), BECCS is likely to negatively impact food security, freshwater availability, biodiversity, and disrupt the nitrogen cycle. Social stress, competition for scarce resources, and migrations could then all plausibly ensue. As per SRM, the consequences of misuse of this technology are even more dire than NET’s as, without an ambitious planetary commitment to mitigate and capture carbon, SRM would lock humanity into this sort of geoengineering for centuries to come and would also expose us to rapid and calamitous temperature increases if it were to be suddenly stopped (Burns & Nicholson, 2017; Niemeier & Tilmes, 2017). Temperatures would skyrocket well above the 2 C goal somewhat arbitrarily established by the scientific and policy community (Titley, 2017). And temperature increases of 4 C – argues Anderson – are “incompatible with any reasonable characterization of an organized, equitable, and civilized global community” (Anderson, 2012, p. 29).

### Geoengineering CP---Other Crises

#### It doesn’t solve most drivers of unsustainability.

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

It’s worth pausing to reflect on the growing fascination with geoengineering. What’s interesting about it is that it embodies the very same logic that got us into trouble in the first place: the idea that the living planet, rendered as mere ‘nature’, is nothing but a set of passive materials that can be subdued, conquered and controlled. Geo-engineering represents dualism taken to astonishing new extremes, unimaginable by Bacon and Descartes, where the planet itself must be bent to the will of man so that capitalist growth can continue indefinitely. The fatal flaw of geo-engineering is that it seeks to solve the ecological crisis with the very same thinking – the very same hubris – that created it in the first place. But perhaps more immediately, the problem with geo-engineering is that it is ecologically incoherent. Solar radiation management is only a partial response to the crisis we face. It would do nothing to slow the pace of ocean acidification, or deforestation, or soil depletion, or mass extinction. And this brings us to the next point.

### Geoengineering CP---AT: Albedo/SRM

#### SRM doesn’t solve---the effects are unpredictable AND atmospheric side effects are as bad as warming---specifically ozone

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

In the face of this evidence, those who insist on continued growth have been turning to increasingly outlandish ideas – not just BECCS but a growing menu of science-fiction techno-fixes based on large-scale geoengineering. Most of these schemes are so difficult and expensive to implement that you might as well just swallow the cost of actually reducing emissions instead. But there’s one that stands out from the crowd, and which has attracted significant attention. It’s called solar radiation management.

The idea is to use a fleet of jets to inject aerosols into the stratosphere, forming a giant veil around the Earth to reflect sunlight and therefore cool the planet. It’s relatively cheap and easy to do. So easy, in fact, that scientists worry that rogue agents – say, a meddling billionaire or a desperate island state that’s about to go underwater – could pull it off single-handedly. A number of governments are commissioning research on solar radiation management, and the idea has been celebrated by fossil fuel executives who see it as a way to preserve their business model.

But it’s not without its risks. Existing models suggest it could end up tearing holes in the ozone layer, slow photosynthesis to the point of decreasing crop yields, and irreversibly alter global rainfall patterns and weather systems – mostly to the detriment of the global South. Jonathan Proctor, a scientist who studies solar radiation management, says ‘the side effects of treatment are as bad as the original disease’. Janos Pasztor, another expert in this field, points out that the consequences could end up being even worse than we’re able to predict: ‘The global atmosphere is unbelievably complex … we have advanced computer modelling with supercomputers, but we still don’t really know how to model it.’24

#### Extinction

Thomas et al. 15, Brian C. Thomas is Professor, Department of Physics & Astronomy, Washburn University; Patrick Neale: Principal Investigator, Senior Scientist at Smithsonian Environmental Research Center; Brock R. Snyder II, Washburn University,, “Solar Irradiance Changes and Photobiological Effects at Earth’s Surface Following Astrophysical Ionizing Radiation Events,” Astrobiology, vol. 15, no. 3, Mary Ann Liebert, Inc., publishers, 03/01/2015, pp. 207–220

We have presented results of improved and expanded modeling of the surfacelevel irradiance and subsequent biological impact of a GRB, which may also be applied to other astrophysical ionizing radiation events. We find that previous work overestimated the surface-level UVB irradiance by about a factor of 2; however, values for the relative change in DNA damaging irradiance here are not significantly smaller than those previously reported. This is an important result that indicates previous studies are reliable, at least roughly, in evaluating the potential biological impact of ionizing radiation events. The simpler approach used in previous work is faster and easier to implement, so we conclude that it is still useful, at least in giving a general sense of the magnitude of potential threats to life on Earth (using relative DNA damage as a proxy).

Our surface-level irradiance results also have implications for suggestions in past work (Melott et al., 2005; Thomas et al., 2005; Martin et al., 2010) that the climate could cool following the production of NO2 and accompanying reduction in visible light. That work neglected the compensating effect of reduced O3, which actually leads to a net increase in visible light (PAR) over the long term. Net decreases in PAR are limited in area and duration, and hence it appears that climate cooling suggested in earlier work may be unlikely. We make no attempt here to further examine potential climate changes, which are complicated and affected by many factors related to atmospheric and irradiance changes. Any conclusions about associated climate changes will require sophisticated modeling that includes all atmospheric and irradiance changes following an ionizing radiation event, which is well beyond the scope of this work.

Besides improving the modeling of surface-level irradiance, we also sought to expand estimates of the biological consequences beyond simple DNA damage estimates. The biologically weighted irradiance results presented in Section 3.2 show that the impact of O3 depletion following astrophysical ionizing radiation events can be highly variable, even for similar biological measures (such as skin cancer or productivity of marine phytoplankton), and significant increase in weighted irradiance for one organism or for one particular type of biological effect does not necessarily indicate a similar increase in weighted irradiance for all biological effects. This complicates the question of whether a particular level of O3 depletion will lead to widespread catastrophe for Earth’s biosphere. That said, we may still conclude that biological damage would be widespread and significant for many or most organisms. Extinction events always display a range of impacts on different groups of organisms, with some being completely wiped out, others barely surviving, and still others emerging relatively unscathed (Jablonski, 2005); our results exhibit this variability.

Importantly, our results also show that significant effects can occur at all levels of organism-complexity; humans, higher plants, and phytoplankton all show a significant increase in damage following O3 depletion. Previous work has generally assumed that major O3 depletion would hit primary producers especially hard, potentially leading to a collapse of the food web. These results support the idea that primary producers would be significantly impacted, but that impact is not uniform between various species. Additionally, we see significant impact on higher-complexity organisms, indicating that a food-web collapse is not necessary for there to be potential for extinction at higher trophic levels.

#### Triggers ‘snowball earth’---extinction

Oliver Morton 15, senior editor at The Economist, was previously chief news and features editor at Nature and editor of Wired UK, honorary professor in Department of Science, Technology, Engineering and Public Policy at University College London, “The Ends of the World,” The Planet Remade: How Geoengineering Could Change the World, Princeton University Press, 2015, pp. 305–343

Most plans for weather and climate modification and environmental warfare fell into this category of quasi-realistic impracticality. And they were a bit pointless, too. It wasn’t just that there was no very clear idea about how to go from the first part of von Neumann’s programme – using computers to forecast the weather and model the climate, both endeavours which have worked out pretty well – to the second part – using the understanding the computers provide to exert precise control. It was also because the ideas didn’t actually seem to offer much by way of military advantage. You could knock the Van Allen belts out of kilter – indeed, this idea got through the net and was tried out with a few nuclear tests. You could look at ways to make tsunamis by means of vast bombs exploded under water. But when it came down to it, why bother? The grim capability that had started all the speculation about environmental warfare also made it somewhat otiose. The bomb gave the major powers the wherewithal to reduce each other to ruins. How useful was it, really, to find additional ruinations?

Environmental warfare was not all bluster. But though disturbing, it never became crucial to military planning. The capability was easily and readily given up in the negotiations which led to the UN ENMOD treaty just a couple of years after America’s armed forces were found to have been using cloud seeding and defoliation in Indochina. No one in the military or outside it much mourned its passing.

What, then, of using solar geoengineering as a weapon? Its effects could conceivably cause wars, but as a way of fighting them it seems as impractical as most forms of environmental warfare. If it is done locally it can be undone locally – a fleet of Salter cloudships could be sunk by anti-ship missiles as easily as any other fleet. If it is done globally it would be so untargeted as to be hardly a weapon at all. Even if you came up with a reason to seek to damage some adversary by cooling their climate, rather than by more normal means, it is very hard to imagine how you could use veilmaking to do so without cooling a great deal of the rest of the planet too.\*

There are, though, a few possibilities for weaponization that should at least be mentioned. One is sometimes called ‘countergeoengineering’. If a strong solar geoengineering programme were enacted unilaterally, it would be possible for other powers to counteract its effects by temporarily strengthening the greenhouse effect. Difluoromethane is a compound rather like the CFCs banned by the Montreal protocol, in that it has a very high global warming potential – almost a thousand times greater, molecule for molecule, than that of carbon dioxide. Unlike CFCs, though, it has no effect on ozone and an atmospheric lifetime of only half a decade or so. If you really didn’t like someone else’s solar geoengineering, emitting millions of tonnes of difluoro methane would allow you to strengthen the greenhouse effect in response. When the other party blinks, and stops its veilmaking, you stop emitting and the status quo is back within a few years.

This seems to me an incredibly unlikely bit of statecraft. If you don’t like someone else’s geoengineering it makes much more sense to round up a strong coalition to oppose it, perhaps by mounting a credible military threat against the geoengineering facilities.\* I would imagine that counter-geoengineering would make that a lot harder, and maybe lay you more open to attack yourself. But I feel it would be remiss not to mention it.

The other thing that geoengineering can offer is a doomsday device. David Keith has noted some subtle physical effects that would seem to make it possible to create particles which self-lofted much more effectively and reliably than soot does (if soot does – it remains an open question). Such particles could lift themselves up above the stratosphere and stay up for decades rather than years. Unlike stratospheric geoengineering, which needs constant replenishment that could, if desired, be interrupted, geoengineering using these designer aerosols could be semi-permanent and unstoppable. Deployed in sufficient number, they might be able to decrease the incoming sunlight enough to cool the planet by a number of degrees. If they did so for long enough – a century, say – they could conceivably start an ice age.

Indeed, in principle they could go further than that. In some circumstances – it has happened a few times over the Earth’s history – the ice–albedo effect can drive glaciation a lot further than it has gone in the recent ice ages. In these ‘Snowball Earth’ events it appears that almost all of the continents and most or all of the oceans become ice bound. Triggering such a snowball event would rearrange the earth-system to a degree far beyond anything a nuclear winter, or even an Alvarez-scale dinosaur-killing asteroid, could manage.

#### Lapses make ‘termination shock’ inevitable---extinction

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

Perhaps the biggest problem, though, is that aerosols don’t last long in the stratosphere, so for the plan to work that fleet of jets would have to be at it constantly. And if for whatever reason they stopped, we’d be in real trouble: global temperatures would shoot up again at a rapid pace, rising several degrees within a single decade. This sudden heating, known as ‘termination shock’, would leave countries with little time to adapt. Ecosystems would fall under tremendous strain and huge numbers of species would be wiped out.25 Scientists regard this approach to be too risky to implement, and – like all geo-engineering schemes – a dangerous distraction from the objective of cutting emissions fast.

#### SRM causes global war

Antonia Eliason 21, Associate Professor, University of Mississippi School of Law, “Avoiding Moonraker: Averting Unilateral Geoengineering Efforts,” SSRN Scholarly Paper, ID 3811361, Social Science Research Network, 03/24/2021, papers.ssrn.com, doi:10.2139/ssrn.3811361

In light of the many risks relating to geoengineering, efforts to research and deploy SRM require multilateral coordination, involving states as well as individuals. Right to information, right to participation, and access to remedies are critical human rights that are necessary for meaningful, inclusive environmental protection.106 Unlike emissions reductions which require coordinated action from all global constituents, from states through corporations through individuals, geoengineering can easily be deployed unilaterally, while having global impact.107 Crucially, international law is defined by states and it is within state sovereignty to decide how to act, since states ultimately retain the ability to enforce international law and to select which rules, outside of the limited principles of customary international law and jus cogens norms, they choose to be bound by. This limits the ability for international law to bind states through future multilateral agreements designed to constrain the ability of states to deploy SRM mechanisms.108

With respect to the risk of unilateral state action, unilateral deployment of geoengineering may give rise to significant security hazards, notably “the risk of breakdown of interstate cooperation – including, ultimately, war.”109 In relation to stratospheric aerosol injections, the security risks posed are novel and have the potential to be as disruptive in the 21st century “as nuclear weapons were for the 20th.”110 Failure of SRM mechanisms could drastically alter weather patterns, for instance creating conflicting interests between China and India over monsoon rains.111 To take one example, if solar reflectors are deployed at a LaGrange point, the sun will be blocked in ways that affect the entire planet. Any discussion of such methods should take place on a multilateral basis, since everyone will be affected.

### Geoengineering CP---AT: Albedo/SRM---Causes Extinction

#### Defense presumes management strategies that don’t exist---weaponization’s likely and existential

John Halstead 18, leads the Applied Research team at Founders Pledge, an organization which encourages entrepreneurs to pledge a portion of their profits to effective charities, was a Research Fellow at the Global Priorities Project, a collaboration between the Centre for Effective Altruism and the Future of Humanity Institute, where he specialised in global catastrophic risk, “Stratospheric Aerosol Injection Research and Existential Risk,” Futures, vol. 102, 09/01/2018, pp. 63–77

If there was a single benevolent and effective global political authority, the case for SAI research and, arguably, future deployment would be strong. But this is not the world in which we live, and SAI needs to be assessed in the context of nation-states pursuing their own goals within relatively weak external constraints. SAI creates some unprecedented political challenges that could increase the risk of interstate conflict, but SAI would also bring some security benefits.

3.1. Security benefits

If modelling evidence so far is correct, then SAI would reduce climate impacts, which would in turn help to reduce the security risks that are likely to be associated with global warming. It is very difficult to quantify the expected size of the security risks of climate change (IPCC, 2014a, chap. 12). In a > 6 °C world, there is a serious risk of severe agricultural disruption and of unprecedented migration from the tropics. In recent years, much milder disruption has brought serious political instability. Thus, the security risks associated with climate change appear non-negligible.

3.2. Security risk: direct military use

The vast majority of states are extremely unlikely to use SAI or weather modification more generally, as weapons of war:

“Such applications are banned by an international convention, have limited military use given the inherent unpredictability of weather systems… and compete against cheaper, more effective alternative means of achieving the same military ends.” (Nightingale & Cairns, 2015, 8)

However, there is one caveat to this. It is possible that certain forms of SAI could be used as a doomsday device (Morton, 2015, 342–43). Keith (2010) has discussed the speculative possibility of self-levitating engineered nanoparticles that could loft above the stratosphere and stay there for around a decade, rather than for one to two years.16 If particles such as these were deployed for around a century, they could conceivably start an ice age (Morton, 2015, 342).

However, the existential risks posed by the weapon as described appear negligible. The levels of nanoparticles would have to be continually replenished over the course of a century, and consequently other actors would be willing and able to disrupt its deployment, and its effects could be counteracted by counter-geoengineering (discussed below).

This said, further research into SAI could inadvertently increase knowledge about a geoengineering-based doomsday weapon that does not need to be continually replenished and so is less susceptible to disruption. In this way, SAI research could constitute an information hazard, or could increase attention to a geoengineering-based weapons and thereby constitute an attention hazard (Bostrom, 2011). Research funders should place strict restrictions on research into weaponised forms of SAI. It might also be worthwhile for concerned funders and governments to conduct research into the possibility of a more threatening geoengineering doomsday weapon. This research should probably be classified.

### Geoengineering CP---AT: Albedo/SRM---Causes War

#### SRM causes escalatory security dilemmas that go nuclear

John Halstead 18, leads the Applied Research team at Founders Pledge, an organization which encourages entrepreneurs to pledge a portion of their profits to effective charities, was a Research Fellow at the Global Priorities Project, a collaboration between the Centre for Effective Altruism and the Future of Humanity Institute, where he specialised in global catastrophic risk, “Stratospheric Aerosol Injection Research and Existential Risk,” Futures, vol. 102, 09/01/2018, pp. 63–77

2.3. Termination shock

Due to the long-term warming effects of CO2 and to inertia in the carbon cycle, to provide significant benefits, SAI would probably have to be deployed for around 100 years or more. One of the main risks of SAI stems from the fact that it could be terminated suddenly causing rapid and damaging warming. According to Baum, Maher, and Haqq-Misra, (2013, 168), “while the outcomes of the double catastrophe are difficult to predict, plausible worst-case scenarios include human extinction”. There are some reasons to believe that the risk of termination shock has often been overstated (Parker & Irvine, 2016).15

Firstly, termination shock is only a problem for very thick stratospheric veils. If a more moderate stratospheric veil were used, catastrophic termination shock risk would be reduced (Kosugi, 2013). Secondly, SAI would not necessarily have to be stopped abruptly. SAI could be phased out gradually and thereby reduce the rate at which we arrive at a certain magnitude of warming (Keith & MacMartin, 2015). If we reduce greenhouse gas emissions and use CDR to reduce greenhouse gas concentrations, then SAI could be used to reduce both the rate and absolute magnitude of warming.

Thirdly, for there to be a termination shock, it must be prohibitive to resume SAI within a buffer period of a few months. Given the costs of sudden termination and the cost of SAI, if SAI were stopped for some reason, then, under normal circumstances, other countries would be both willing and able to step in and resume SAI. Moreover, each country would have strong incentives to build resilience into the system, and even if countries did not do this, it is plausible that countries would be able to develop SAI delivery mechanisms quickly from scratch, given their cost. The two most promising delivery methods appear to be custom-built planes and hoses tethered to balloons (Shepherd, 2009). Therefore, for an event to prevent SAI resumption, it would have to be so catastrophic that it prevents the use of planes or large balloons for several months. Thus, a very specific and severe catastrophe is required. Candidates include a very severe engineered pandemic, a very large nuclear war, a large asteroid strike, and so on. It is extremely uncertain how likely they are (Global Priorities Project, 2017, sec. 1), making it very difficult to assess the overall significance of termination shock risk. Nonetheless, these events all seem to have low probability, which suggests that termination shock risk is small.

The risk of termination shock also interacts with SAI’s security risks. Termination shock risk would be exacerbated if SAI deployment reduces willingness to mitigate. If it did, a thicker veil would be needed for a longer period of time.

2.4. Unknown environmental benefits and risks

Research on SAI is in its infancy and our understanding of the climate system is very imperfect. Given this, SAI could have currently unforeseen effects. However, SAI has (admittedly imperfect) natural analogues. Volcanic eruptions have in the past produced global cooling by ejecting particles into the stratosphere. For example, the 1991 Mount Pinatubo eruption injected around 20 million tonnes of sulphur dioxide into the stratosphere (National Academy of Sciences, 2015, 7), without coming close to threatening existential catastrophe. For SAI, 1 to 5 million tonnes of sulphur per year would be required (Shepherd, 2009, 32). Although SAI would be over much longer timeframes (decades to centuries), this analogue does suggest that the unknown environmental existential risks of SAI are negligible. If SAI were to be deployed, it would be rational to first invest significant amounts into climate modelling. A gradual phase-in would also reduce unknown risks.

3. The security benefits and risks of SAI

If there was a single benevolent and effective global political authority, the case for SAI research and, arguably, future deployment would be strong. But this is not the world in which we live, and SAI needs to be assessed in the context of nation-states pursuing their own goals within relatively weak external constraints. SAI creates some unprecedented political challenges that could increase the risk of interstate conflict, but SAI would also bring some security benefits.

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However, the existential risks posed by the weapon as described appear negligible. The levels of nanoparticles would have to be continually replenished over the course of a century, and consequently other actors would be willing and able to disrupt its deployment, and its effects could be counteracted by counter-geoengineering (discussed below).

This said, further research into SAI could inadvertently increase knowledge about a geoengineering-based doomsday weapon that does not need to be continually replenished and so is less susceptible to disruption. In this way, SAI research could constitute an information hazard, or could increase attention to a geoengineering-based weapons and thereby constitute an attention hazard (Bostrom, 2011). Research funders should place strict restrictions on research into weaponised forms of SAI. It might also be worthwhile for concerned funders and governments to conduct research into the possibility of a more threatening geoengineering doomsday weapon. This research should probably be classified.

Overall, the risks posed by direct military use currently appear small relative to the environmental benefits.

3.3. Security risk: unilateral deployment

SAI appears to create some major governance challenges, firstly because it could be unilaterally deployed, and secondly because it politicises the weather and its success depends to some extent on continued agreement by affected states over long time periods.

Turning first to unilateralism, some have argued that since SAI is so cheap and works so quickly, a wide array of actors, including a coalition of large states, a single small state or even a rich billionaire could unilaterally deploy SAI (Victor, 2008). SAI is therefore subject to the unilateralist’s curse or free driver problem: because deployment capability is so widely dispersed, if states act in what they believe to be the national or the global interest, SAI deployment will tend to be suboptimal by damaging other regions (Bostrom, Douglas, & Sandberg, 2016; Wagner & Weitzman 2015).17 Regionally damaging SAI would increase the risk of interstate conflict.

In my view, the risks of unilateralism are overstated. Firstly, as argued in Section 1, the cost estimates relied upon are likely to be a significant underestimate, plausibly by an order of magnitude. Secondly, as Parson (2014, 98) has argued “these scenarios overstate the distribution of capabilities and thus the risk of unilateral action, because they focus too narrowly on financial cost as the determinant of capability and neglect other, non-financial, requirements and constraints.” An SAI programme large enough to make a non-trivial sustained impact on the climate would be hard to conceal and vulnerable to military attack.

“[U]nilaterally achieving a climate alteration that matters would require not just the money, technological capability, and delivery assets, but also the command of territory, global stature, and ability to deploy and project force necessary to protect a continuing operation against opposition from other states, including deterring their threats of stopping it through military action.” (Parson 2014, 99)

This suggests that scenarios in which small states or rich individuals deploy SAI are vanishingly unlikely.

Indeed, Horton (2011) has persuasively argued that SAI is actually characterised by a logic of multilateralism. The success of an actor’s SAI programme would depend on whether other actors were also pursuing their own SAI programme and would be ineffective without coordination. Moreover:

“States opposed to geoengineering have a number of tools at their disposal to counteract climate interventions. In the case of SAI, for example, fluorocarbon gases could be deployed to offset cooling effects. Alternatively, the strategic use of black carbon could neutralize artificial albedo enhancement.”(Horton, 2011, 62)

In short, if powerful actors were opposed to an SAI programme by a state or a collective of states, they could effectively discourage it using ordinary military threats or by counteracting the effects of SAI.

The foregoing suggests that the decision to deploy unilaterally would not be taken lightly, given the incentives created by conventional military threats and the ease with which SAI schemes can be disrupted. Even for a case in which a major power is facing very severe climate impacts, SAI without support from other major powers would likely either be counter-productive or ineffective. In my view, this suggests that unilateral deployment even by a powerful state or some coalitions of powerful states is not a serious danger, provided that there are some dissenting major powers (though it should be noted that many experts disagree).

This analysis still allows that the interests of states that lack international standing could be ignored. However, the existential risks of this are negligible because this could not precipitate a nuclear war between major powers.

3.4. Security risk: politicisation of the weather and unilateral withdrawal

SAI poses some major governance problems, chiefly stemming from the fact that it would produce regionally diverse impacts and would politicise the weather for a long period of time. To bring substantial benefits, SAI would probably have to be deployed for a century or more, which means that robust global agreement on SAI would have to be sustained for that time period. Even if, as the evidence suggests, SAI reduces overall harms relative to a Greenhouse Planet, it is highly likely to cause harm to some countries at some point. One (partial) solution to this is to ensure that those affected are compensated.18 There is some disagreement about the feasibility of an adequate compensation scheme (Nightingale & Cairns, 2015; Horton, Parker, & Keith, 2014). If the harm is particularly severe – thousands of deaths or more – it may be difficult to find a level of compensation that is politically acceptable to the affected party.

Moreover, some countries will experience adverse weather events while SAI is deployed and will attribute these events to SAI, even if SAI is not in fact responsible. The climate system is highly unpredictable and chaotic, so at best we will be able to attain probabilistic causal attribution of adverse events to SAI (Horton et al., 2014). Trust in the probabilistic models would have to be high for severe adverse weather events not to be blamed on SAI by some members of the public or by political leaders.

If countries do blame severe adverse weather events on SAI, the response is likely to be angry and irrational, perhaps including suspicion about the motives of the controlling coalition (Nightingale & Cairns, 2015). If countries are particularly badly affected they may demand SAI termination or, in the extreme case, retribution. The controlling coalition would then have to manage a slow termination while placating the affected party. If the competing parties are nuclear states, this interstate tension could arguably increase existential risk, though the magnitude of the existential risk posed by nuclear war is somewhat unclear. Furthermore, if SAI reduces willingness to mitigate, SAI would have to be deployed for longer and at greater intensity, which would increase the risk of regional damages and would increase the period in which the weather is politicised.

Importantly, the arguments in this and the previous section suggest that the barriers to effective and sustained deployment of SAI are significant. This makes SAI less useful as a tool against the (arguable) existential risks of climate change. Firstly, SAI is only likely to be deployed once climate change starts to impose substantial costs on most or all regions; and secondly, it will be difficult to sustain agreement on an SAI deployment programme over the course of decades. This suggests that SAI is likely to be used only if climate change turns out to be particularly bad.

### Geoengineering CP---AT: Albedo/SRM---AT: Microbubbles

#### It’s not technologically possible AND doesn’t solve warming BUT does collapse ocean ecosystems.

Carnegie Institution 15, citing Ivana Cvijanovic, Ken Caldeira, Douglas G MacMartin, at the Carnegie Institution for Science, Department of Global Ecology, “Whitening the Arctic Ocean: May restore sea ice, but not climate,” ScienceDaily, 4-28-2015, https://www.sciencedaily.com/releases/2015/04/150428171402.htm

Some scientists have suggested that global warming could melt frozen ground in the Arctic, releasing vast amounts of the potent greenhouse gas methane into the atmosphere, greatly amplifying global warming. It has been proposed that such disastrous climate effects could be offset by technological approaches, broadly called geoengineering. One geoengineering proposal is to artificially whiten the surface of the Arctic Ocean in order to increase the reflection of the Sun's energy into space and restore sea ice in the area.

New research from Carnegie's Ivana Cvijanovic (now at Lawrence Livermore National Laboratory) and Ken Caldeira, as well as Douglas MacMartin of Caltech, shows that while an incredibly large effort could, in principle, restore vast amounts of sea ice by this method, it would not result in substantial cooling. As a result, it would not be effective in keeping the ground frozen in the Arctic. Their findings are published by Environmental Research Letters.

"By the middle of the century, the Arctic Ocean is predicted to be ice-free during part of the year," lead author Cvijanovic explained. "This could create substantial ecological problems in the Arctic, including habitat range changes and loss of biodiversity."

Beyond this, it could also have devastating effects on human settlements of Arctic indigenous communities.

"However the problem is not only local -- a number of studies have indicated that Arctic sea ice loss can affect weather patterns across the northern midlatitudes, including Europe, most of North America, and much of Asia," Cvijanovic added.

The technological feasibility of various Arctic whitening ideas is very much up in the air. Proposals include floating grains or microbubbles that would reduce the absorption of the Sun's rays. But beyond whether they are even feasible, it is important to determine whether or not they would have the desired environmental impact if they were implemented.

Using specially developed model configurations, the team studies how Arctic whitening would be expected to play out in a world with four times the preindustrial amount of atmospheric carbon dioxide , and an Arctic that is about 10 degrees Celsius hotter (18 degrees Fahrenheit).

They found that these sorts of whitening methods could restore some amount of sea ice -- about three-quarters of a square kilometer of ice for every whitened square kilometer (or three-quarters of a square mile for every whitened square mile). However, the cooling achieved by ocean whitening is modest and appears unable to do very much to maintain permafrost and prevent the release of the greenhouse gas methane.

Another interesting finding is that ocean whitening and sea ice recovery is likely to affect the climate far outside the Arctic region.

"Ocean whitening and the sea ice recovery achieved in this way could lead to wetter and milder winter conditions in the southwestern United States and cooler conditions in the eastern United States," Cvijanovic explains.

"Simply put, our results indicate that whitening the surface of the Arctic Ocean would not be an effective tool for offsetting the effects of climate change caused by atmospheric greenhouse gas," Caldeira said. "Furthermore, it is not clear to me that there is a technologically feasible way of actually doing this, and even if you could do it, the direct negative consequences of reducing the amount of sunlight available to marine ecosystems could be huge."

#### Extinction

Landrigan et al. 20, Philip J. Landrigan, MD, MSc, the corresponding author, is a professor at Boston College, with many co-authors, “Human Health and Ocean Pollution,” Annals of Global Health, vol. 86, no. 1, 2020, PubMed Central, doi:10.5334/aogh.2831

The oceans are vast. They cover more than 70% of the earth’s surface, hold 97% of the world’s water, host some of the planet’s most diverse ecosystems, and support economies in countries around the world [1,2]. Microscopic organisms in the seas are a major source of atmospheric oxygen [3,4,5,6]. By absorbing more than 90% of the excess heat released into the earth’s environment and nearly one-third of carbon dioxide emissions, the oceans slow planetary warming and stabilize the global climate [7].

The oceans are essential to human health and well-being [8,9,10,11,12,13]. They provide food to billions, livelihoods for millions and are the source of multiple essential medicines [14]. They have traditional cultural value and are a source of joy, beauty, peace, and recreation [15,16]. The oceans are particularly important to the health and well-being of people in small island nations [17], the high Arctic, and coastal communities, especially those in the Global South [1]. The very survival of these vulnerable populations depends on the health of the seas [10,12].

Despite their vast size, the oceans are under threat, and human activity is the main source of the threat [1,2]. Climate change and other environmental disruptions of human origin have caused sea surface temperatures to rise, glaciers to melt, and harmful algal species and pathogenic bacteria to migrate into waters that were previously uncontaminated. Rising seas and increasingly violent coastal storms endanger the 600 million people worldwide who live within 10 m of sea level [1]. Rising concentrations of atmospheric CO2 have caused acidification of the oceans, which in turn destroys coral reefs, impairs development of oysters and other shellfish, and dissolves calcium-containing microorganisms at the base of the food web [1,18,19]. The oceans are losing oxygen [1]. Fish stocks are declining [20,21,22]. Dredging, mechanized trawling, oil exploration, and planned deep undersea metal mining threaten the seabeds [23].

Pollution – unwanted, often hazardous waste material released into the environment by human activity – is one of the existential challenges of the present age [24]. Like climate change, biodiversity loss, and depletion of the world’s fresh water supply, pollution endangers the stability of the earth’s support systems and threatens the continuing survival of human societies [8].

### Geoengineering CP---AT: NETs

#### NETs are a pipe dream---studies saying otherwise are written and sponsored by crooks and jokers

Wim Carton 20, assistant professor at the Lund University Centre for Sustainability Studies, Sweden, “Carbon Unicorns and Fossil Futures: Whose Emission Reduction Pathways Is the IPCC Performing?,” Has It Come to This?: The Promises and Perils of Geoengineering on the Brink, edited by J.P. Sapinski et al., Rutgers University Press, 11/13/2020, DOI.org (Crossref), doi:10.36019/9781978809390

If one is to believe recent Intergovernmental Panel on Climate Change (IPCC) reports, then gone are the days when the world could resolve the climate crisis merely by reducing emissions. Avoiding global warming in excess of 2°C/1.5°C now also involves a rather more interventionist enterprise: to remove vast amounts of carbon dioxide from the atmosphere, amounts that only increase the longer emissions refuse to fall.1 The basic problem with this idea is that the technologies that are supposed to deliver these “negative emissions” do not currently exist at any meaningful scale. Given the large uncertainties surrounding their feasibility; their expected effects on land use change, food security, and biodiversity; and their scalability, it moreover seems improbable that they ever will.2 Indeed, there appears to be something of an unspoken consensus among scientists that the mitigation scenarios represented in the IPCC increasingly mirror science fiction writing. In a recent assessment, the European Academies Science Advisory Council (EASAC), for example, concluded that negative emissions technologies (NETs) have “limited realistic potential” to help mitigate climate change on the scale that many scenarios assume will be needed.3 One expert summarized the skepticism well when she recently characterized such technologies as “carbon unicorns,”4 underscoring the widening gap between the level of mitigation that is needed and the apparent infeasibility of the pathways that are supposed to take us there.

Despite its fantastical nature, however, the negative emissions idea has recently burst into the public arena, where it is already leading a life of its own. For skeptics, this raises the concern of a “moral hazard,” or the possibility that the mere promise of future NETs could act as a break on emission reductions in the present.5 Techno-optimist policy makers, the thinking goes, might very well seize on the negative emissions idea as a “get-out-of-jail” card, holding back from rapid near-term decarbonization in the belief that opportunities for future negative emissions offer a sufficient guarantee that the climate crisis can be contained. It is, above all, future generations, and particularly the poorest among them, that would face the consequences when this “high-stakes gamble” eventu- ally backfires and large- scale NETs turn out to be little more than a pipe dream.6 At that point, the window of opportunity for avoiding dangerous warming through conventional mitigation would have closed, and the world would be left with the unenviable choice between runaway warming or implementing some of the more dystopian geoengineering technologies that this book docu- ments. These are not empty fears: as I discuss next, the perceived necessity to defer the bulk of mitigation into a discounted future is the exact logic that underpins the rise to prominence of NETs in mitigation scenarios.7 How can we expect policy makers to guard against wishful thinking when even scientists appear unable to do so? Besides, the negative emissions concept has already strayed beyond the realm of abstract science and policy debates. The business case for mitigation deferral is already under construction, suggesting that NETs are already performing valuable political- economic work. This makes it necessary to scrutinize much more closely what is actually going on in the various models that generate the apparent need for negative emissions.

Take the example of Shell. While not exactly known for its vanguard mitiga- tion actions, the company recently released a document in which it outlines its vision to keep global warming “well below 2°C.”8 Unsurprisingly perhaps, Shell’s “most ambitious climate scenario” turns out to include substantial fossil fuel use well into the future. It, for example, assumes that demand for oil will grow until about 2025 and then decrease only gradually. By 2050, the year when the world needs to reach net-z ero emissions in order to stay below 1.5°C,9 oil demand in this scenario would still account for about 85 percent of current consumption. By 2070, the net-z ero target for 2°C, fossil fuel production would still be respon- sible for 16.5 GtCO2, or almost half of what it is today. For Shell to be able to claim that these estimates are compatible with the targets of the Paris Agree- ment, it heavily relies on speculative technologies, in particular carbon capture, usage, and storage (CCUS) and NETs. It thus assumes that all the remaining fossil fuel carbon can be captured and/or compensated for by storing it in prod- ucts (6.1 GtCO2/yr), applying direct carbon capture and storage (CCS) to oil and gas installations (3.4 GtCO2/yr), and deploying large- scale bioenergy with carbon capture and storage (BECCS—6 .1 GtCO2/yr), which is the NET most often favored in models. In total, this would require that “some 10,000 large car- bon capture and storage facilities are built, compared to fewer than 50 in opera- tion in 2020.”10 To reach 1.5°C, the company then imagines that an additional effort could be made by planting “another Brazil in terms of rainforest.”11

These astonishing claims fulfill a clear function, even if they are only a sce- nario exercise or a best- case “possible” future, not a concrete prediction or com- mitment. The inclusion of NETs and CCUS in Shell’s future scenario constructs a vision in which the risk for stranded assets is minimized. It makes it possible to claim, as Shell does in its Shell Energy Transition Report, that all the company’s proven and potential fossil fuel reserves could be utilized— around twenty- five years of reserves at current production rates— while still staying within the limits of the Paris Agreement.12 Invoking a future of large-scale negative emissions in this way suggests that there is no need to cut fossil fuel production before its economic value has been fully recovered and thus no need for drastic short- term changes in the company’s business model.13 Given the urgency of the climate problem, this surely seems extraordinary. Is Shell making these numbers up? An analysis by Carbon Brief suggests that the math does indeed add up. Despite being somewhat optimistic about future energy demand in general, Shell’s projections of future coal, oil, and gas demand and of the scale at which NETs could be deployed are all broadly in line with those of 2°C- compatible IPCC scenarios. If anything, Shell’s scenario is at the lower end of how much negative emissions models say could be deployed by the end of the century.14

In itself, of course, it is unremarkable that a fossil fuel company would use all means possible to help justify the continued use of oil and gas, including foster- ing narratives about the large- scale deployment of future carbon unicorns. This, after all, is the company that has known about the dangers of climate change since at least the 1980s and still decided to double down on oil and gas invest- ments.15 More surprising is the fact that this logic appears fully internalized in mainstream climate scenarios— in other words, that the IPCC reports appear to feature emission reduction pathways that seem fully compatible with mas- sive continued fossil fuel use in the medium term. More than a “moral hazard,” this suggests some fairly hazardous scientific morals. Surely this should raise a few eyebrows. How is it possible that the world’s most authoritative science on climate change is generative of scenarios that play directly in the hands of the fossil fuel industry? In this chapter, I want to explore some of the reasons this is occurring. I want to argue that the path that led to the inclusion of negative emissions in models and from there into the IPCC was a profoundly ideological one and that we need to understand it as such to make sense of the way in which negative emissions are already being invoked to justify business as usual. Doing so, I suggest, helps us challenge the now common idea that negative emissions are somehow an inevitable reality of climate politics.

#### NETs are way less likely to work than degrowth.

--AR = Afforestation/Reforestation

--BECCS = Bioenergy with Carbon Capture and Storage

--NETs = Negative Emissions Technologies

Lorenz T. Keyßer & Manfred Lenzen 21, Keyßer, ISA, School of Physics A28, The University of Sydney; Lenzen, Department of Environmental Systems Science, Institute for Environmental Decisions, ETH Zürich, “1.5 °C Degrowth Scenarios Suggest the Need for New Mitigation Pathways,” Nature Communications, vol. 12, no. 1, 1, Nature Publishing Group, 05/11/2021, p. 2676

Negative emission technologies

Large-scale NETs deployment faces numerous and substantial risks for sustainability and feasibility2. Only two NETs, AR and soil carbon sequestration, are currently available at scale13. However, IAMs most prominently include BECCS12. In doing so, modellers make numerous assumptions of substantial uncertainty11,41. The EROI of BECCS may be extremely low27. BECCS is associated with major land-use change and its potentially negative side-effects2,10,12, e.g., the further transgression of several planetary boundaries42, especially biodiversity43. CCS, either as part of BECCS, or applied to coal and gas, faces similar barriers and uncertainties2,44. More risks of reliance on large-scale NETs remain2,10,12, e.g., direct air capture technologies strongly increasing energy and water use45. Even large-scale AR as a NET is not unproblematic, being vulnerable to carbon loss and having potentially negative side-effects on land use change, albedo, biodiversity, and food security12,13,41. Anderson & Peters46 thus conclude that (p. 183) ‘the mitigation agenda should proceed on the premise that [NETs] will not work at scale. The implications of failing to do otherwise are a moral hazard par excellence.’ Therefore, it is justified to consider the reliance upon large-scale (e.g., medium (200–400 GtCO2) and high (>400 GtCO2)) NETs deployment a substantial risk for feasibility and sustainability.

The scenarios minimising NETs (<200 GtCO2) either show very high renewable growth and medium energy-GDP decoupling (‘IPCC’ and ‘IPCC-NoNNE’), low energy-GDP decoupling and high renewable growth (‘Degrowth’ and ‘Degrowth-NoNNE’) or high energy-GDP decoupling and high renewable growth (‘Dec-Extreme’ and ‘Dec-Extreme-NoNNE’). Compared with these scenarios, degrowth scenarios are relying on the lowest speed and scale of renewable energy expansion as well as the lowest energy-GDP decoupling for any shared level of NETs deployment, thus showing the lowest risks for feasibility and sustainability.

#### There are insurmountable technical barriers---it’s a classic moral hazard.

Kevin Anderson & Glen Peters 16, Tyndall Centre, University of Manchester, “The Trouble with Negative Emissions,” Science, vol. 354, no. 6309, American Association for the Advancement of Science, 10/14/2016, pp. 182–183

Mitigation on methadone: how negative emissions lock in our high-carbon addiction

In December 2015 member states of the United Nations Framework Convention on Climate Change (UNFCCC) adopted the final text of the Paris Agreement, a principal aim of which is to hold “the increase in the global average temperature to well below 2°C” and “to pursue efforts to limit the temperature increase to 1.5°C”. The Agreement also requires “a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century”, and since some non-zero sources are unavoidable, this leads to the abstract concept of ‘negative emissions’.

Carbon budgets

To understand the implications of the Paris Agreement for mitigation policy, the qualitative language of “well below 2°C” and “limit…to 1.5°C” can be translated into quantitative carbon budgets, specifying how much carbon dioxide can be emitted across the century to respect a given temperature level (1). Because of uncertainties in the climate system, such budgets are specified with quantitative likelihoods.

Borrowing from the IPCC’s taxonomy of likelihoods, the most generous interpretation of the Paris Agreement’s “well below 2°C” is at least a “likely” (66-100%) chance of not exceeding 2°C. Of the 900 mitigation scenarios from about 30 Integrated Assessment Models (IAMs) assessed by the IPCC (2), 76 scenarios from five IAMs had sufficient data to estimate the carbon budget for a likely chance of not exceeding 2°C. These scenarios give a carbon budget of between 600 and 1200GtCO2 (10-90% range) for the period 2016 until the peak in temperature (updated from (1)). Increasing the likelihood of keeping temperatures below 2°C, or shifting to 1.5°C, will decrease still further the available carbon budget (3). The budget is also subject to an annual reduction of around 40GtCO2 each year due to continued fossil fuel, industry, and land-use change emissions (4).

Despite their intuitive appeal, carbon budgets have several layers of complexity making it impossible to assign a unique budget to a given temperature rise (5). Assumptions on future non-CO2 emissions affect significantly the available CO2-only budgets. The dominance of a limited number of IAMs used to estimate carbon budgets means that the future scenario space is not exhaustively explored and there is limited model diversity (6). Consequently, though carbon budgets provide a valuable guide to the scale of the mitigation challenge, they cannot give a precise constraint on how much carbon can be emitted to avoid a specific and probabilistically defined temperature rise.

From carbon budgets to emission pathways

Any given carbon budget is consistent with a wide range of potential emission pathways (2). The 76 scenarios consistent with a likely chance of not exceeding 2°C exhibit a range of key characteristics (Figure 1). Two features are immediately striking.

First, the dominant presumption that the large-scale roll out of ‘negative emission technologies’ is technically (2), economically (2), and socially (7) viable. In many of the scenarios the level of negative emissions is comparable in size to the remaining carbon budget (Figure 1), and are sufficient to bring global emissions to at least net-zero in the second half of the century.

Second, there is a large and growing deviation between current emission trends and emission scenarios. The sum of the national emission pledges submitted to the Paris negotiations (COP21) lead to an increase in emissions, broadening the gap with pathways consistent with the Paris Agreement (8) and

requiring the need for either much more severe near-term mitigation(9) or additional future negative emissions.

It is not well understood by policy makers (10), or indeed many academics, that IAMs assume such a massive deployment of negative emission technologies. Yet when it comes to the more stringent Paris obligations, studies suggest that it is not possible to reach 1.5°C with a 50% chance without significant negative emissions (3). Even for 2°C, very few scenarios have explored mitigation without negative emissions (2), and contrary to common perception, negative emissions are also prevalent in higher stabilisation targets (Figure 2) (11). Given such a pervasive and pivotal role of negative emissions in mitigation scenarios, their almost complete absence from climate policy discussions is disturbing and needs to be addressed urgently (12).

Negative Emission Technologies (NETs)

Negative Emission Technologies (NETs) exist at various levels of development (13-16). Afforestation (and reforestation), though not strictly a technology, is already claimed by countries as a mitigation measure (17). Bioenergy, in combination with carbon capture and storage (BECCS), is the most prolific NET included within IAMs and is used widely in emission scenarios. It has the unique feature of providing energy (via biomass combustion) and, in principle (18), removing CO2 from the atmosphere to provide a claimed economic benefit (assuming carbon is valued) which may offset, at least in part, the additional costs of using the technology (19) . The carbon is assumed to be fully absorbed during biomass growth, and is captured pre- or post-combustion and then stored underground indefinitely. Despite the prevalence of BECCS within emission scenarios, at a level much higher than afforestation, only one large-scale demonstration plant exists today.

Other NETs have not yet moved beyond theory or small-scale demonstrations. Alternative and adjusted agricultural practices, including biochar, can increase the carbon uptake in soils (14) (Smith 2016), and a variety of countries have already proposed these as policy measures. It is possible to use direct air capture to remove CO2 from the atmosphere via chemical reactions, with subsequent storage similar to CCS. Enhancing the natural weathering of minerals (rocks) is able to store carbon in soils, land, or oceans. Natural carbon uptake in the ocean can, potentially, be increased through the introduction of biological or chemical catalysts. It is also possible new technologies, designs and refinements will emerge over time, though caution must be exercised as to the timeframe for such novel technologies to reach maturity and subsequently be rolled out at scale.

BECCS: a political panacea

The allure of BECCS, and other NETs, stems from their promise of much reduced political and economic challenges today, compensated by speculative technologies tomorrow. Given the huge opportunities for near-term, rapid and deep reductions in energy demand at little cost (technical and behavioural), alongside ongoing cost declines in many renewable energy technologies, it is understandable that concerns arise as to why BECCS is used so prolifically in emission scenarios.

The answer is simple. Integrated assessment models apply discount rates, often have perfect foresight, and typically find that large-scale BECCS pathways are cost-optimal solutions over the 21st century. In effect, the discounted cost of BECCS in future decades is less than the cost of deep mitigation today. In postponing the need for rapid and immediate mitigation, BECCS licences the ongoing combustion of fossil fuels whilst still, ostensibly, fulfilling the Paris commitments. What’s not to like?

Technically, BECCS simply combines bioenergy with CCS. In practice, both of these key components face major and perhaps insurmountable obstacles. Two decades of research and several pilot plants have struggled to demonstrate the technical and economic viability of power generation with CCS, even when combusting relatively homogeneous fossil fuels (20). Substituting for heterogeneous biomass feedstock adds to the already considerable challenges. Moreover, the sheer scale of biomass used in IAMs informing government policy raises profound questions (15) about carbon neutrality, land availability, competition with food and competing demands for bioenergy from the transport, heating and industrial sectors. Beyond this, the logistics of collating and transporting quantities of bioenergy, equivalent in energy value of up to half of total global primary energy consumption, is seldom addressed. While some studies suggest BECCS pathways are feasible, at least locally (19), the broader literature points to global scale limitations (15). Given the existing struggles of CCS and the continuing uncertainty about large-scale bioenergy, BECCS remains a highly speculative technology.

Whilst all NETs are subject to a myriad of scientific and political uncertainties, BECCS has come to dominate the scenario landscape. However, as recognition of the ubiquitous role of BECCS has grown so have concerns about the efficacy of the sheer scale of deployment assumed (15). Land use impacts alone have been linked to a loss of terrestrial species greater than a 2.8°C temperature rise (14), leading to difficult trade-offs between biodiversity loss and temperature rise. There is also a dearth of detailed and robust analysis examining the trade-offs between large-scale deployment of BECCS (and all NETs) and the broader Sustainable Development Goals (SDGs). Such a level of circumspection is, however, far removed from the technical utopia informing the IAMs. Despite BECCS continuing to stumble through its infancy, many of scenarios assessed by the IPCC propose its mature and large-scale roll out as soon as 2030 (Figure 1).

Moral hazard and intergenerational inequity

Ultimately, the appropriateness or otherwise of relying, in significant part, on NETs to realise the Paris commitments is an issue of risk (11). However, the distribution of this risk is highly inequitable, with the potential failure of NETs to deliver at the scale enshrined in many IAMs being felt most by those low-emitting communities who are geographically and financially vulnerable to a rapidly changing climate.

If NETs follow the idealised and rapid deployment assumed in the IAMs, and provided earth system feedbacks are reasonably linear, any reduction in near-term mitigation incentivised by future NETs will likely see only an incremental overshoot in temperature (3). In stark contrast, if the many reservations increasingly voiced about NETs (and significantly BECCS) turn out to be an accurate reflection of reality, the weakening of near-term mitigation and the failure of future NETs will be a prelude to rapid temperature rises reminiscent of the 4°C pre-Paris pathways (8).

NETs are not an insurance policy, but instead are much more akin to an unjust and high stakes gamble. There is a very real risk they will be unable to deliver on the scale of their promise. Consequently, if the emphasis on equity and the risk averse sentiment embodied in the Paris Agreement’s “well below 2°C” and “pursue … 1.5°C” commitments are to have any traction, NETs should not form the basis of the mitigation agenda. This is not to say that they should be abandoned(20, 21), but that whilst they could very reasonably be the subject of serious research, development and potentially deployment, the mitigation agenda should proceed on the premise that they will not work at scale. The asymmetric implications of failing to do otherwise is a ‘moral hazard’ par excellence.

#### Even if it can reverse carbon concentrations, it can’t fix climate tipping points

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

In addition – and here’s the final nail in the coffin – even if by some miracle we managed to avoid all of these complications and get BECCS working smoothly we would still be in trouble, because overshooting the carbon budget means triggering possible tipping points and feedback loops that could push temperatures completely out of our control. And if that happens, the whole exercise would have been in vain. We might be able to pull carbon out of the atmosphere at some future point, but we cannot reverse climate tipping points.10

### Geoengineering CP---AT: NETs---Yes Moral Hazard

#### Negative emissions create moral hazards that net undermine mitigation

Kevin Anderson & Glen Peters 16, Tyndall Centre, University of Manchester, “The Promise of Negative Emissions—Response,” Science, vol. 354, no. 6313, American Association for the Advancement of Science, 11/11/2016, pp. 714–715

AS WE WROTE IN OUR Perspective, we agree with Lackner et al. that negative-emissions technologies should “be the subject of research, development, and potentially deployment.” We support research on the technical, environmental, social, and economic viability of negative-emissions technologies. However, we stand by our conclusion that given the breadth and depth of fundamental uncertainties associated with negative-emissions technologies (1–6), a program of timely and deep mitigation in line with 2°C budgets should assume that they will not be deployed at a large scale.

A mitigation agenda that does not rely on future large-scale application of negative-emissions technologies will require a legislative environment that delivers profound social and behavioral change by high-emitters, rapid deployment of existing low-carbon energy technologies, and urgent research and development of new promising energy technologies, including negative-emissions technologies. If negative-emissions technologies do indeed prove to be successful, then a lower temperature rise can be subsequently pursued.

Lackner et al. claim that including negative-emissions technologies in assessments does not delay other mitigation tactics. On the contrary, evidence indicates that an assumption of negative-emissions success does delay conventional mitigation. Without negative-emissions technologies, much more ambitious and far reaching mitigation is required (2). The 2∞C scenarios assessed by the IPCC that do not include negative emissions but do allow afforestation have considerably lower fossil-fuel consumption than scenarios that include negative emissions [e.g., Fig. S4 in (7)]. The “emissions gap” (8, 9) between the necessary level of mitigation to deliver on the Paris goals and the collective proposition of governments (i.e., the sum of the Intended Nationally Determined Contributions) would be much larger if negative emissions were excluded.

We stand by our claim that postulating large-scale negative emissions in the future leads to much less mitigation today. Negative emissions facilitate the appealing option (10) of exceeding tight carbon budgets and assuming that the debt will be paid back later. If we cannot pay back our carbon debt because the negative-emissions technologies do not deliver as planned, then we have saddled the vulnerable and future generations with the temperatures we seek to avoid in the Paris Agreement. To use the analogy of Lackner et al., we knowingly let someone jump into a raging torrent, telling them we may be able to save them with a technology we have yet to develop.

### Geoengineering CP---AT: NETs---AT: Afforestation/Reforestation (AR)

#### AR can’t make growth sustainable---not scalable, too hard to maintain, causes ag production leakage that destroys other forests.

Barbara Muraca & Frederike Neuber 18, Oregon State University, “Viable and Convivial Technologies: Considerations on Climate Engineering from a Degrowth Perspective,” Journal of Cleaner Production, vol. 197, 10/01/2018, pp. 1810–1822

4.2. Afforestation

Afforestation ranges on quite the opposite side of the CE spectrum and might be quite suitable as a contrasting example. In this context, is not always clear what kind of technology still counts as mitigation and which one already should count as CDR. With respect to forestation, one can distinguish between Conservation, Reforestation and Afforestation. Where conservation and reforestation aim at saving or restocking already existing forest sites, afforestation means to plant fast-growing trees on fallow land, usually in the desert. Since this endeavor differs from conventional forest management in governmental, infrastructural and technical terms, afforestation can be seen as a CE technology.

At first sight, afforestation strategies seem little worrying. Planting trees is the symbol of sustainable and conscious stewardship of nature. Yet, greening the desert with an artificial forest or planting trees where crop should stand is a different matter. Hence, afforestation strategies are as controversial as any CE technology.

As far as artificial plantations in arid areas are concerned, there is quite a logistic challenge. A specific proposal from Becker and his colleagues (Becker et al., 2013) suggests to plant heat resistant trees in the Arabian Desert. In costal areas seawater could be desalinated and be used for watering. Such “carbon farming” is, according to the authors, efficient (uptake 17–25t of carbon dioxide per hectare per year), and compatible with other forms of Carbon Removal, e.g. Carbon Capture and Storage (CCS) (Becker et al., 2013).

Still, with respect to the upfront technical investment, this form of Afforestation is quite elaborate. Roads must be paved, water must be desalinated, workers must plant the trees and control the plantation steadily. Without constant human input, the trees will dry up. From the point of view of viability, this seems quite parasitic on other processes.

Moreover, there is no ecological benefit from these plantations, since they are monocultures. On the contrary, they invade already existing and steady ecosystems in the desert, on which animals and some human communities rely. Thus, those plantations are neither sustainable nor self-reliant.

Another proposal is to use former agricultural land for afforestation. Here again, the line between re- and afforestation is quite thin, since much land used for agriculture was former forest, especially in the tropics. Here, afforestation schemes could go hand in hand with nature conservation efforts. However, these schemes may have influence on the food prices. Since afforestation and food production compete for land, any diminishing of farm-land may lead to higher crop prices. How high the rise may be depends on the amount of land converted into forest. In order to show effect, afforestation must be rather grand in scale. If, for example, 50% of the world's cropland was replanted, the carbon uptake would be about 50 ppm more as compared to a business-as-usual scenario (Arora and Montenegro, 2011). Even if only conservation schemes were to be implemented, non-forest carbon leakage could occur. Non-forest carbon leakage describes the process of turning non-forest land, that is not subject to conservation schemes, but contributes highly to carbon sequestration (e.g swamps or tundra), into agricultural land. In order to avoid this leakage and also stabilizing food prices, agricultural productivity would have to increase (Popp et al., 2014). This is a clear example of an infinite regress in terms of Georgescu-Roegen's analysis: to increase productivity fertilizers would have to be produced and the regeneration of the soil triggered by additional flow inputs.

Popp et al. (2014) and Arora and Montenegro (2011) calculate their scenario in light of a business-as-usual baseline scenario that adopts no other mitigation strategies. The effectiveness of afforestation schemes in tropical areas might increase, if at the same time global food waste is diminished, food choices change and food security is provided on a regional, decentralized level. On the same regional level, afforestation schemes can be planned and organized, which do not conflict with agricultural decisions and are significantly less parasitic on other resources and people. Enhancing models of afforestation that meet the needs and cultural traditions of people used to live off the forest could combine biophysical and social benefits and increase forms of autonomy in Illich' sense (food sovereignty and self-determination). It is questionable whether the size would suffice for a large scale CE technology.

As mentioned above, to avoid carbon leakage, preferably all forest-sites in question would have to be taken into account. The coordination and financial investments of afforestation schemes must be subordinate to a global forest policy.

If Afforestation is to be deployed in a viable and convivial fashion, its deployment alone will not stabilize the CO2 concentration in the atmosphere. Afforestation can only be an additional measure in mitigation policy to tackle global climate change.

### Geoengineering CP---AT: NETs---AT: Biomass

#### BECCS fails---can’t be scaled up and it’s not commercially viable

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

In 2001, an Austrian academic named Michael Obersteiner published a paper describing a brilliant new technology: an energy system that would not only be carbon-neutral, but would actively pull carbon out of the atmosphere.1 The proposal was stunning in its elegance. First you establish massive tree plantations around the world. The trees suck CO2 out of the atmosphere as they grow. Then you harvest the trees, churn them into pellets, burn them in power plants to generate energy, capture the carbon emissions at the chimneys and store it all underground where it can never escape. Voila: a global energy system that produces ‘negative emissions’.

This technology is known as BECCS: bio-energy with carbon capture and storage. When Obersteiner published his paper there was no evidence that the scheme would actually work; it was just speculation. But the sheer possibility of it captivated those who were looking for politically palatable ways of staying under 2°C. The idea was that we can get by with making relatively minor reductions to CO2 emissions – nothing that would pose any significant threat to economic growth – so long as we manage to get BECCS up and running. We’ll overshoot the carbon budget, but that’s OK because BECCS will pull the excess carbon back out of the atmosphere later in the century, bringing us back into the safety zone. Emit now, clean up later.

It was a crazy gamble, and everyone knew it. But the idea spread like wildfire. It held out the tantalising possibility of meeting our climate goals while keeping capitalism intact, and while allowing rich nations, who wield so much power in the climate negotiations, to maintain their high levels of consumption. It was incredibly alluring – a kind of get-out-of-jail-free card – and it offered real hope to green growth optimists.

A few years after Obersteiner’s paper was published the IPCC started including BECCS in its official models, even though there was still no evidence of its feasibility. And in 2014 the idea took centre stage: BECCS appeared in the IPCC’s Fifth Assessment Report (AR5), not only as a side show, but as the dominant assumption in no fewer than 101 of the 116 scenarios for staying under 2°C. AR5 is the blueprint that the Paris Agreement relies on. Governments are using the AR5 scenarios as a guide when it comes to deciding how quickly to reduce their emissions. This helps explain why national plans significantly overshoot the carbon budget for 2°C: it’s because everyone’s relying on scenarios that assume BECCS will save us.

In other words, BECCS sits right at the centre of our big plan to save the world, even though most people have never even heard of it. Journalists never mention it, our politicians never talk about it; not because they’re trying to hide something, or because it’s too complicated to explain, but because most of them don’t know it even exists. They’re just following the scenarios. The future of our planet’s biosphere, and of human civilisation, hinges on a plan that very few people know about, and to which nobody has consented.

Jumping off a cliff

But there’s a hitch. Climate scientists have been sounding the alarm about BECCS from day one, and their objections have grown louder with every passing year. There are four main problems with the idea – each potentially fatal.

First, BECCS has never been proven to be scalable. To make it work would require that we create a global carbon-capture-and-storage (CCS) system capable of sucking up some 15 billion tons of CO2 a year. Right now we have capacity to handle about 0.028 billion tons – and only a fraction of that is verified. Since a typical CCS facility can handle about 1 million tons, we would need to construct some 15,000 new facilities all around the world.2 The scale of this development is enormous – it would be one of the biggest infrastructural feats ever attempted in human history – and we have no idea whether it’s possible to pull it off in time. We also have no idea whether it will be commercially viable. Right now it is not. It will only become viable if governments around the world agree to put a price on carbon at least ten times higher than it is presently priced in the European Union.3

#### Even if it works, it requires tons of land---locks in global famine and resource wars

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

Even if we somehow manage to overcome the technical and economic obstacles, we’ll bump straight into another crisis. In order for BECCS to remove as much carbon as the IPCC scenarios assume, we will need to create biofuel plantations covering an area two to three times the size of India, gobbling up about two-thirds of the planet’s arable land. This would require shifting land away from food crops, which is a problem when we’re trying to feed a population that’s on track to grow to at least 9 billion by the middle of the century. In other words, relying on BECCS at scale would be likely to cause severe food shortages and could even trigger famines. It’s not difficult to imagine the conflicts this would catalyse. And let’s not pretend that powerful nations are going to willingly give their own land over to biofuels; it’s more likely they’ll attempt to seize land elsewhere, setting off a kind of climate colonialism. Where wars were once fought over access to oil, they would instead be fought over land for biofuels.

#### Biomass NETs transgress multiple sustainability boundaries---extinction

Jason Hickel 21, economic anthropologist, Fulbright Scholar and Fellow of the Royal Society of Arts, “Three - Will Technology Save Us?,” Less Is More: How Degrowth Will Save the World, Random House, 02/25/21, pp. 115–149

On top of all this, BECCS would be an ecological disaster in its own right. A team of researchers led by the German scientist Vera Heck has estimated that the rollout of biofuel plantations at scale would have a number of devastating impacts. Vast tracts of forest would have to be destroyed, slashing global forest cover by 10% from its already-precarious levels. This would drive an additional 7% loss in biodiversity, further exacerbating mass extinction.7 And the use of chemical fertilisers for monoculture on such an unprecedented scale would decimate insect populations, pollute water systems, exacerbate soil depletion and worsen coastal dead zones.8 In addition, BECCS plantations would require twice as much water as we already use for farming, placing communities and ecosystems around the world under significant stress.9

In other words, BECCS might help us in the battle against climate change, but only by pushing us headlong into a number of other deadly problems. If global warming was the only crisis we were facing, this might seem like a reasonable risk to take. But given that it’s only one part of a broader ecological crisis, it doesn’t make any sense. It’s a suicidal [deadly] strategy.

### Geoengineering CP---AT: NETs---AT: Biomass---Unsustainable---Ext

#### BECCS causes extinction

--PBs = Planetary Boundaries

Heck et al. 18, Potsdam Institute for Climate Impact Research, “Biomass-Based Negative Emissions Difficult to Reconcile with Planetary Boundaries,” Nature Climate Change, vol. 8, no. 2, 2, Nature Publishing Group, 02/2018, pp. 151–155

Under the Paris Agreement, 195 nations have committed to holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to strive to limit the increase to 1.5 °C (ref. 1 ). It is noted that this requires "a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of the century"1 . This either calls for zero greenhouse gas (GHG) emissions or a balance between positive and negative emissions (NE)2,3 . Roadmaps and socio-economic scenarios compatible with a 2 °C or 1.5 °C goal depend upon NE via bioenergy with carbon capture and storage (BECCS) to balance remaining GHG emissions4–7 . However, large-scale deployment of BECCS would imply significant impacts on many Earth system components besides atmospheric CO2 concentrations8,9 . Here we explore the feasibility of NE via BECCS from dedicated plantations and potential trade-offs with planetary boundaries (PBs)10,11 for multiple socio-economic pathways. We show that while large-scale BECCS is intended to lower the pressure on the PB for climate change, it would most likely steer the Earth system closer to the PB for freshwater use and lead to further transgression of the PBs for land-system change, biosphere integrity and biogeochemical flows.

Negative emissions can fulfil several purposes. In a prospective, 2 °C or 1.5 °C warmer world with balanced sinks and sources of GHG emissions, they can allow for limited remaining fossil fuel use and/or compensate remaining agricultural or natural emissions (for example forest fires) or carbon leakages. If a complete decarbonization of the fossil fuel and agricultural sectors is achieved, NEs could reduce atmospheric CO2 concentrations. BECCS is currently discussed as a promising NE technology12. It is therefore of considerable interest to examine the implications of NEs via BECCS in a holistic Earth system framework, such as the framework of a ‘safe operating space’10,11, delineated by nine PBs for human perturbations of the Earth system.

Here, we quantitatively assess trade-offs between BECCS and the status of five out of nine PBs for climate scenarios reaching 1.5 °C and 2 °C above pre-industrial. We consider the two PBs identified as core PBs, climate change and biosphere integrity11, as well as the PBs for land-system change, biogeochemical flows and freshwater use, which are already transgressed except for freshwater use11. The latter four PBs have sub-global operating scales which are recognized in the definition of regional boundaries underpinning the globallevel boundaries11. According to the precautionary principle, each PB is placed at the lower end of a scientific uncertainty range of its position. Upon transgression into the uncertainty zone, nonlinear shifts can no longer be excluded, while transgressing its upper end implies moving into a danger zone of high risk of irreversible shifts. To capture the importance of regional environmental change for the functioning of the Earth system we adopt the concept of a safe zone and a zone of increasing risk (uncertainty zone) also for the regional boundaries. These regional boundaries are: amount of remaining forest cover, biodiversity intactness index (BII), environmental flow requirements and imposed nitrogen fertilization limits, all calculated at the grid-cell level and subsequently aggregated to the analysis scale of regional boundaries (refer to Supplementary Table S2). We further compare our results to the originally defined global PBs.

Within this framework we distribute second-generation herbaceous or woody biomass plantations (irrigated or rainfed) using a spatially explicit multi-objective optimization approach in which biomass plantations can be allocated only on areas not required for food and feed production (see Methods). For this assessment, baseline agricultural land-use patterns are derived using the global land-use model MAgPIE13,14 applied for the shared socio-economic pathways SSP1 (sustainability), SSP2 (middle of the road) and SSP5 (fossil-fueled development)15 with and without climate policy to achieve RCP2.6 climate forcing levels (see Methods for details). Two alternative optimization objectives are examined: first, maximizing biomass production for NEs under the strict constraints of regional boundaries (safe) or the upper-end of their uncertainty zones (increasing risk); second, achieving certain biomass production for NE while minimizing the pressure on global PBs. We measure the state of the Earth system with respect to each PB via the global and regional control variables (Supplementary Table S2). The optimized biomass plantation patterns are combined with the agricultural baselines and assessed for PB impacts with the well-established biogeochemical model LPJmL, driven by an ensemble of climate scenarios scaled to reach a global warming of 1.5 °C and 2 °C in the second half of the century16 and capturing differences in the spatial patterns produced by 19 climate models (see Methods). Results are averaged over 2051–2082 (covering four harvest cycles). To obtain NE and bioenergy potentials we consider two alternative conversion pathways: biomass conversion to hydrogen (B2H2) with high capture rates (90%) and conversion efficiencies (55%), and conversion to liquid fuels (B2L) with lower capture rates (48%) and efficiencies (41%) [ref. 17 and see Methods]. Input of fossil fuels for biomass production and transportation is assumed to be 10% of the primary energy content18,19.

In all agricultural baseline scenarios (SSP patterns excluding biomass plantations for 2050) the global PBs for climate change, biosphere integrity, land-system change and nitrogen flows are transgressed even further than at present. Thus, in a strict sense, NEs via BECCS are not compatible with navigation of human development within the safe operating space for the agricultural landuse scenarios assessed, as BECCS would put additional pressure on the PBs.

### Geoengineering CP---AT: NETs---AT: CCS

#### CCS can’t be scaled up and exaggerates warming

Samuel Alexander 18, Melbourne Sustainable Society Institute, Melbourne School of Design, University of Melbourne, “A Critique of the Australian National Outlook Decoupling Strategy: A ‘Limits to Growth’ Perspective,” Ecological Economics, Volume 145, 2018, pp. 10-17

The ANO Report also places great faith in carbon capture and storage technology (CCS) as a means of extensively reducing carbon emissions. The technology is obviously attractive, in theory, because it holds out the hope of prolonging the consumption of coal and gas in power stations – while capturing most of the emissions – and therefore delaying the need for a transition to 100% renewable energy. There is, however, no discussion of the many unresolved problems with the technology. And even if it proves technically feasible at scale, future CCS costs are subject to such great uncertainty that it is impossible, at this stage, to assess economic feasibility in any definitive way.

The report does acknowledge that despite two decades of research and pilot projects, CCS has ‘not yet been demonstrated at commercial scale’11 (Hatfield-Dodds et al., 2015b: 50). This is not just with respect to the capturing of carbon from power plants, but also transportation via pipelines and storage in permanently safe geological sites (Scott et al., 2015; Hamilton, 2016). To date, most storage pilot projects have been abandoned because they ran into technical problems and cost blowouts (Hamilton, 2016). And yet, despite the lack of progress to date, the Stretch scenario assumes CCS compatible coal and gas provides 50% of both Australian and global electricity by 2050. At the global level this requires about 2500 GW of CCS electricity generation, which seems highly optimistic (Hatfield-Dodds et al., 2015b: 54). By comparison, the IEA's's (2008) most ambitious CCS implementation target, known as the BLUE map scenario, assumes about 1500 GW of CCS compatible power generation by 2050 (IEA, 2008: 69).

In addition, heavy reliance on CCS could still result in a significant release of C02 emissions, exacerbating global warming. Lenzen (2011) reviews estimates of life-cycle carbon emissions for CCS applied to coal and gas power plants and finds a realistic capture rate of 80% emissions across all CCS applications (i.e. capture, transport, injection etc.). He points out that these estimates have typically not factored in the possible contribution of carbon leakage from geological storage sites. He shows that to safely capture 1500 GtCO2 – which is close to the estimated global storage capacity – requires a CO2 leakage rate no higher than 0.01% per year. Such a low leakage rate, however, is far from certain. He notes (Lenzen, 2011: 2171) that several studies (i.e. Pehnt and Henkel, 2009) have ‘emphasised the lack of knowledge and experience of underground storage and have concluded that there is no guarantee for the low leakage rate.’ If the rate of leakage turns out to be significantly higher – i.e. between 0.1% and 1% per annum – the additional long-term warming effect from CCS alone would be between 0.15 °C and 0.5 °C.

#### It’s too expensive to be a real solution

Budinis et al. 18, Department of Chemical Engineering, Imperial College London, “An Assessment of CCS Costs, Barriers and Potential,” Energy Strategy Reviews, vol. 22, 2018, pp. 61–81

3. Barriers to CCS development

Many abatement technologies affect the use of fossil fuels. The range of options is large, and includes both direct approaches, affecting the use of fossil fuels or their emissions into the atmosphere (e.g. enhanced energy efficiency and conservation; replacement of coal by natural gas; greater use of nuclear power; carbon capture, utilisation and storage) [53,54]; and indirect approaches, increasing the remaining carbon budget (such as the development of mass market renewable energy technologies, afforestation and reforestation). In [TABLE 4 OMITTED] [TABLE 5 OMITTED] [TABLE 6 OMITTED] extremely emissions constrained scenarios (e.g. net zero emissions in the second half of this century as put forward in COP21), indirect measures will be ineffective simply because there will be no carbon budget left to open up.

Carbon capture and storage refers to a process that separates CO2 from a gas stream and stores it underground. CCS can be applied to power generation and industrial facilities and includes three main steps which are the separation of CO2 from the gas stream, its compression and transportation (via pipeline or shipping) and its storage in a suitable geological site (e.g. saline aquifers, depleted oil and gas reservoirs). CCS is categorised according to the class of capture process (post-combustion, pre-combustion, and oxy-combustion) and type of separation technology (absorption, adsorption, membranes, cryogenic distillation, gas hydrates, and chemical looping) [54–56]. While post-combustion and pre-combustion capture technologies are widely used (between TRL 1 and 5), oxy-combustion capture is still under development and not yet commercial, while pre-combustion is likely to be “decades away from commercial reality” [57].

Carbon capture and storage can be integrated in processes which therefore can be classified as carbon-positive, near carbon-neutral or carbon-negative. Carbon-positive processes still emit CO2 to the atmosphere, while near-carbon neutral do not and carbon-negative process reduce the amount of CO2 which is already in the atmosphere [58]. An example of carbon-negative processes is Bio-Energy with CCS (BECCS) processes, which usually include either electricity [59] or biofuel production [60]. BECCS are part of a class of technologies known as Negative Emission Technologies (NETs), which also include reforestation and afforestation, various forms of geo-engineering, Carbon Dioxide Removal (CDR) such as CO2 capture from the air and ocean fertilization [61]. BECCS and reforestation would arguably be the most attractive options to create negative emissions [61]. According to McLaren [62], NETs cannot be expected to offer an economically viable alternative to mitigation in the coming decades. At the same time, their limited deployment (10–20 GtCO2/yr) can help reducing the overall CO2 emissions by 2030–2050.

The review presented in this section has identified as main challenges to the uptake up of CCS its cost and energy penalty, followed by location and capacity of storage sites. There are several non-technical barriers, including the lack of market mechanisms and incentives, fewer effective mechanisms to penalise major CO2 emitting sources, inadequate legal framework allowing transport and storage (both inland and offshore) and public awareness and perception [53,63,64].

At the current CO2 capture rate (which represents the percentage of CO2 emitted by the process that will be captured and ultimately sequestered), no major purely technological barriers exist for capture, transport and storage of CO2. Indeed, CO2 separation and reinjection is a common feature of regular oil and gas industry operations. At the same time, the cost of capturing CO2 in a non-regulated market is preventing progress.

Regarding location and capacity of storage sites, the main factors to take into account include cumulative capacity of carbon storage, rates of release and uptake, connection from source to store and climate impact of storage timescale [65].

3.1. Cost of CCS

Cost of CCS has been identified as the major challenge preventing the widespread adoption of this technology, and has been investigated more in detail in section 4. Estimating actual CCS cost and expressing it in a clear way is challenging. This is mainly due to lack of empirical data (currently, in the power sector there are only two full scale CCS plant in operation [11,66]), difficulty in choosing the baseline when comparing different CCS plants, a variety of currencies and currency base years in the reported literature, cost differences due to unavailability of transport and storage infrastructure and a variety of processes, operating conditions and capture processes. Section 4 reports on how the cost of CCS can be expressed and which values have been estimated in the literature. Costs have been reported in $2015 by converting single currencies into US dollars and then taking inflation into account. The results of the analysis show a great variability among sources, with a lack of data for specific processes or capture technologies, and identify the capture step as the most expensive step of the CCS chain.

### Geoengineering CP---AT: NETs---AT: CCS---Ext

#### Workforce barriers prevent rapid large-scale CCS uptake.

Budinis et al. 18, Department of Chemical Engineering, Imperial College London, “An Assessment of CCS Costs, Barriers and Potential,” Energy Strategy Reviews, vol. 22, 2018, pp. 61–81

3.4. Supply chain and building rate

In the literature, the rate of technology deployment and cost reduction of CCS has been compared to development timescales in the oil and gas industry (e.g. 3–5 years for the build-up of a giant gas field, according to Söderbergh et al. [86]), and also to the more recent experience of implementation of post-combustion capture of sulphur oxides and nitrogen oxides at coal-fired power plants based in the US [57].

In 2012, IEAGHG commissioned a study on potential supply and capacity constraints associated with equipment for CCS plants [87]. The study focused on the global scale and included the full CCS chain (capture, transport and storage) but excluded the power or industry equipment. Part of the purpose of this study was to understand if the CCS roadmap proposed by IEA [2] could meet major barriers due to supply or capacity constraints. The results of the study have identified as major potential supply chain constraints hydrogen turbines for the capture step, pipelines for the transport step, availability of geo-engineers and drilling rigs for the storage step and finally availability of petroleum engineers across the full CCS chain. The conclusion of the study did not identify any insurmountable obstacles to the deployment of CCS as suggested by IEA [2]. However, the construction rate for CCS applied to the power industry would be lower than historical power plant construction rates. In addition, the suggested deployment of CCS in the industrial sectors (capture of 65% of current emissions by 2050) has been considered optimistic. Overall, the most significant risk is represented by the competition between CCS and the oil and gas sector for experienced staff and drilling equipment necessary for exploration activities. Similar issues have been identified in a study focussing on the UK market [88].

Similar challenges have been discussed in an interview with CCS developers during the course of this project, where the following issues were cited to be important when considering barriers to CCS: geological appraisal and power station build; availability of skilled labour; and regulatory shortfalls. The geological appraisal of a store takes 3–4 years, while a power station build takes 3–4 years for gas turbines and 5–6 years for solid-fuelled systems (these timelines are representative for a plant based in EU or USA but could vary for developing countries such as China). Therefore, if appraisal and power station build are simultaneous, the CCS aspect may be on the critical path. But if the power station build is dependent on the suitability of the store, appraisal may need to proceed prior to power station build. However, if national CO2 transportation infrastructure were already present, any dependency would be largely eliminated. The availability of sufficient skilled labour could represent a bottleneck in the long term. However in the short term, there may be a higher workforce availability due to the recently depressed oil and gas prices resulting in a number of job losses [89]. As an example, the White Rose project in the UK was estimated to need onaverage 4000–5000 people over approximately five years, with a peak of 9000 people. Finally, at present the regulatory environment for CCS infrastructure is not well developed, leading to uncertainty regarding development timeframes and price models.

The process of the 3–4 year appraisal period for a CCS site is not new, and is already regularly undertaken by the oil and gas industry. Overall, construction-related barriers to CCS development appear to be a minor issue, meaning that the risk is largely non-technical in nature, which could mean that financial environments and/or regulation will change significantly over the construction period.

#### Sequestering carbon fails---can’t be scaled up fast enough

Dr Colin Pritchard 14, Senior Research Fellow in the School of Engineering at the University of Edinburgh, Dr Aidong Yang, Associate Professor in the Department of Engineering Science at Oxford, P. Holmes, M. Wilkinson, 25 June 2014, “Thermodynamics, economics and systems thinking: What role for air capture of CO2?” Process Safety and Environmental Protection, ScienceDirect

As a means of reducing absolute atmospheric CO2 levels, each 1 ppm reduction requires the removal of ca. 7 Gt CO2 (neglecting any continuing accumulation of emissions). At 400 ppm concentration, this requires processing at the very least 12,000 Gt of air. Fugitive CO2 emissions equate to about 55% of total emissions or about 18 Gt/year. Of this, about 4 Gt/year is from transport ( IEA, 2012). Targeting transport emissions alone via DAC requires processing almost 6500 Gt/year of air. Capture of these emissions would have to be done continuously and would require an infrastructure which is likely to be 300 times larger than that to treat current global annual point source emissions, if the size of the infrastructure is proportional to the volume of the processed air/gas.

In practice the required scales of operation may need to be much higher, because the later we start, the higher will be the peak and the more CO2 will have to be removed to stabilise at a particular target atmospheric concentration (discounting climate tipping points which may have been reached in the meantime). At projected rates of growth in emissions, reductions of 20–30 Gt/year have been forecast to be necessary beyond 2030, and these are far above the capacity which could be conceived as practical for air capture. This timescale for development and deployment also appears to be unrealistically short: comparable to the most optimistic estimates for deployment of point source CCS – a mature technology – at scale.

In a wide-ranging discussion of NETs, McGlashan et al. (2012) point out that “The scale of development for these (emissions-reduction) technologies required for them to have material impacts on atmospheric levels of CO2 to be significant would, in many cases, result in the need for the development of supply chains in less than 20 years from an extremely low level or from scratch, to the scale of many of the largest industries in existence today which have developed over centuries. This strongly implies that mitigation must still remain the main near-term effort in terms of addressing climate change. Negative emissions technologies can be seen as an economically rational tool to augment mitigation efforts and prevent emissions trajectories overshoot within a portfolio of emissions measures, but they should not be used as an excuse for delaying effective global mitigation efforts.” (italics ours).

#### Even if capturing carbon can reverse CO2 increases it can’t reverse temperature-based tipping points---and it trades off with emission reduction---accelerates warming

Dr Colin Pritchard 14, Senior Research Fellow in the School of Engineering at the University of Edinburgh, Dr Aidong Yang, Associate Professor in the Department of Engineering Science at Oxford, P. Holmes, M. Wilkinson, 25 June 2014, “Thermodynamics, economics and systems thinking: What role for air capture of CO2?” Process Safety and Environmental Protection, ScienceDirect

Following the air capture path will lead to higher peak (and gross) CO2 emissions than taking more immediate measures. Keith et al. (2005) acknowledge that “The expectation that air capture or similar technologies can be achieved reduces the incentive to invest in mitigation. Yet, while air capture removes irreversibility in the increases in atmospheric CO2 concentration, it does not protect against irreversibilities in the climate system's response to forcing.” They also demonstrate that “It is optimal to pollute more when it is possible to cleanup afterward than when it is not.”

The suggestion that low emission countries be involved in mitigation assumes that, with a world-wide carbon trading system in place, countries could earn credits by absorbing other countries’ carbon emissions via air capture. This would only make economic sense if all of the cheaper methods for carbon capture had already been deployed in the emitting countries!

The idea that DAC can provide an excuse for delaying more direct mitigation efforts is particularly corrosive; and this paper finds no evidence to justify such a stance, which could further lead to an irrecoverable situation as we approach “irreversibilities in the climate system's response to forcing”.

From a public perspective, there is a danger that championing of air capture (if conducted without informing the public of the techno-economic issues such as those outlined in this paper), may lead to a perception that “the climate problem is sorted“, and thereby diminish the incentive to take (much) more realistic measures such as energy efficiency/conservation, and CCS, and bioenergy with CCS (BECCS), and decarbonisation of electricity supply, and even the decarbonisation of transport. This is of course a danger faced by all technological approaches to CO2 reduction.

#### CCS tech takes so much energy that it offsets its own climate benefits

Jennie C. Stephens 14, is the Blittersdorf Professor of Sustainability Science and Policy at the University of Vermont's Rubenstein School of Environment. March 2014, “Time to stop investing in carbon capture and storage and reduce government subsidies of fossil-fuels” http://onlinelibrary.wiley.com/doi/10.1002/wcc.266/pdf

The amount of energy required to capture and store CO2 is often not adequately recognized in optimistic perceptions of the potential of CCS. This so-called energy penalty has been estimated to be about 30% with a range from 11 to 40%.20 This means roughly that for every three coal-fired power plants utilizing CCS an additional power plant would be required simply to supply the energy needed to capture and store the CO2. The magnitude of this energy penalty (including even the lower estimates) is so high that it is difficult to imagine a future scenario in which consuming this much additional energy to enable CCS would actually make sense.

#### Storage is not economically feasible

Kevin Bullis 13, Senior Editor for Energy @ MIT Technology Review, June 17 2013, “What Carbon Capture Can’t Do,” http://www.technologyreview.com/view/516166/what-carbon-capture-cant-do/

I’ve recently reported on a handful of ways that researchers are trying to lower the cost of capturing carbon dioxide, with the view to storing it underground or using it for something useful (see “Cheaper Ways to Capture Carbon Dioxide,” “Grasping for Ways to Capture Carbon Dioxide on the Cheap,” and “Fuel Cells Could Offer Cheap Carbon Dioxide Storage”).

All of these improvements shouldn’t obscure the fact that the potential of carbon capture is limited. Carbon capture and storage will never be able to accommodate all of the carbon dioxide we emit now. And quite frankly, carbon capture would have trouble just keeping up with the increase in coal consumption (see “The Enduring Technology of Coal”).

Capturing and storing carbon dioxide will always make electricity more expensive. It will always be cheaper just to let the carbon dioxide escape into the atmosphere.

Even if costs are made far lower than they are today, the impact of carbon capture will be limited by the sheer scale of infrastructure needed to store carbon dioxide. During combustion, each carbon atom from coal combines with two atoms of oxygen from the air, and this creates a huge amount of stuff. Even once the gas has been compressed into a liquid that can be piped to storage sites, the volume is immense.

Vaclav Smil, a professor at University of Manitoba and master of sobering energy-related numbers, calculates that if we were to bury just one-fifth of the global carbon dioxide emissions, we would need to build an industry capable of handling twice the volume of stuff as the entire oil industry, an industry that took 100 years to develop, driven by a large and mostly expanding market.

### Geoengineering CP---AT: NETs---AT: OIF

#### OIF deployments fail BUT cause ocean dead zones

Lillan Henseler 15, Environmental Policy Group, Wageningen University, “Geoengineering techniques: silver bullet or climate gamble? Examining ethical considerations of geoengineering schemes,” 8/6/15, https://edepot.wur.nl/358350

Unintended side effects

Ocean iron fertilization could have several unintended side effects. For example, ocean iron fertilization could influence food web dynamics (Powell, 2010). As stated before, phytoplankton is at the bottom of the food chain and changes in their composition could influence the entire food chain. These changes can turn out positively, for instance as a boost for overfished fish stocks. However, ocean iron fertilization can also cause the development of toxic algal blooms. In addition, the remineralization of the sinking organic matter could lead to anoxia in the subsurface ocean, which is the depletion of dissolved oxygen, or increased ocean acidity (Gnanadesikan, Sarmiento, & Slater, 2003). There are only few organisms that tolerate low oxygen levels, so Anoxia can lead to dead zones in the ocean. Ocean acidity can also have adverse consequences for marine ecosystems. For instance, ocean acidity can lead to coral bleaching. When considering the possible adverse side effects of ocean iron fertilization, it is important to keep in mind that these effects are scale and time dependent. During the first ocean iron fertilization experiments, no harmful negative effects have been observed. However, such effects might occur if iron fertilization activities are scaled up (Denman, 2008; Powell, 2008).

Financial costs

It is difficult to fully estimate the financial costs of the process of ocean iron fertilization and there are not yet reliable cost estimates available (IPCC, 2007). Some have argued that iron fertilization would only cost $1-2 per metric ton of carbon captured (Markels & Barber, 2001). However, it is very likely that the costs will be higher when additional costs such as material costs; transport costs and monitoring costs are considered (Allsopp, Santillo, & Johnston, 2007). In addition, ocean iron fertilization can lead to fisheries loss. When taking this loss into account, the financial costs of ocean iron fertilization could be up to 150 dollars per ton of carbon sequestered (Gnanadesikan, Sarmiento, & Slater, 2003).

Ethical reflection on geoengineering schemes

In the previous sections, the geoengineering schemes that are discussed in this thesis are thoroughly explained. This section reflects on these findings and compares ethical issues of the three techniques by making use of the deontological and utilitarian ethical approach. It is important to note that ethical theories, such as utilitarianism and deontology, might not deliver just one answer, but may give reasons both against and in favor of the research and/or deployment of geoengineering technologies. In addition, while being entirely different ethical paradigms, utilitarianism and deontology may arrive at the same conclusions, though by different reasoning. This chapter starts with a discussion of utilitarian considerations of the geoengineering technologies and will then continue with a reflection on the techniques from a deontological perspective.

Utilitarian considerations regarding geoengineering

According to utilitarian thinking, a lot of actions could be moral in certain situations. From a utilitarian perspective, climate change mitigation is preferred to employing geoengineering. Reducing GHG emissions is by far the safest and most effective way to counteract climate change. However, utilitarian thinkers would also keep an open mind for other solutions. Humanity has got itself in a horrendous mess, and the deadlock in climate change negotiations has made reaching a legally binding agreement on the reduction of GHGs seem an impossible task. Besides that, mitigation may not be sufficient to maintain a stable climatic system anymore. Scientists fear that climate change will lead to tipping-point events; gradual climate change can lead to an abrupt change in the climatic system when a certain threshold is crossed, causing perhaps irreversible processes, which in turn can lead to catastrophic consequences for natural and human systems (Lenton, 2011). Therefore, from a utilitarian perspective, it is morally justifiable to do research into geoengineering strategies, so that, if humanity has to take drastic steps to forestall a climate catastrophe, we would be in a position to do so. Besides that it is necessary to have a solid understanding of the different options and their benefits and drawbacks to be able to make well-founded choices. From a utilitarian perspective, it can be argued that the dangers of not doing anything are currently too great to avoid doing research into geoengineering.

Utilitarian theorists adopt a pragmatic approach when they consider the morality of an action; to determine whether an action is moral they merely calculate the good and bad consequences that will result from that particular action. If the good consequences outweigh the bad, then the action is morally justified. Therefore, to analyze the ethical issues of geoengineering schemes from a utilitarian perspective, it is important to get a solid understanding of the consequences of the techniques. As indicated before, the different geoengineering techniques raise different environmental, social and ethical concerns. In the following section, the geoengineering techniques are compared. To do so, a few of the criteria that are suggested by Bentham in his formulations of the felicific calculus are followed. Bentham suggested seven parameters to consider when calculating happiness: intensity, duration, certainty, remoteness, fecundity, purity and extent. Not all of these criteria are relevant for the analysis of the geoengineering schemes. For this analysis, the parameters intensity, certainty, remoteness and purity are chosen for comparing the geoengineering techniques, because they are most relevant for this analysis. These criteria are reformulated3 to improve the understanding of their meaning and to make them suitable for a meaningful comparison and analysis of the geoengineering schemes. A last parameter, affordability, is also included because the cost-effectiveness of geoengineering schemes can be an important issue in decision-making processes with regards to geoengineering. Table 1 shows how the three geoengineering techniques score on the different criteria.

[TABLE 1 OMITTED]

Stratospheric aerosol injection

As can be concluded from the section on stratospheric aerosol injection, this technique seems to be most promising in terms of its cost-effectiveness (also in comparison to other geoengineering techniques) and in being able to affect the global climate and possibly moderating the adverse impacts of climate change. However, stratospheric aerosol injection has safety issues; there are high risks attached to deploying stratospheric aerosol injection technology. As described before, stratospheric aerosol injection may change precipitation patterns, which can lead to droughts in areas in Asia and Africa, possibly affecting many people, animals and ecosystems. Besides that, as explained in the section about stratospheric aerosol injection, it is not possible to suddenly stop stratospheric aerosol injection, because then the global climate would change very rapidly, which would almost inevitably lead to a catastrophe. The potential harms of employing stratospheric aerosol injection are substantial, which makes stratospheric aerosol injection not an attractive option from a utilitarian point of view.

Stratospheric aerosol injection is also ethically dubious from a utilitarian perspective because of its low ‘certainty’; the effects of stratospheric aerosol injection can currently not be reliably predicted. A utilitarian analysis depends heavily on factual assumptions. From a utilitarian point of view it can be argued that more research on the geoengineering techniques is desirable to be able to make better-informed decisions with regard to the employment of the techniques, especially when the risks of that research are negligible. However, in the case of stratospheric aerosol injection, only full-scale implementation would give certainty about the actual impacts of the methodology. Even then, it is difficult to separate the effects of stratospheric aerosol injection from natural climate variability and the anthropogenic impacts on the climate.

It is clear that stratospheric aerosol injection is surrounded by mists of uncertainty, which brings certain unease to deciding upon the deployment of the technology. Yet, there are situations in which, despite the great risks and uncertainties, it might be justifiable to decide in favor of the deployment of stratospheric aerosol injection. Whether or not aerosol geoengineering ought to be deployed in some situation depends on many issues that would need to be examined in detail, such as whether there is really an impending climate emergency, what the specific details of the proposal are, how that proposal compares to other available climate strategies and whose hand is on the thermostat. 5

A utilitarian argument in favor of stratospheric aerosol injection is that it is a quick solution for climate change. Once deployed, SAI could reduce global temperature within one year. As climate change is an imminent worry, the quickness of a geoengineering technology bears some weight in its ethical consideration. According to Bentham’s felicific calculus, a faster solution is better than a delayed one, because it will benefit the world sooner. In that sense, CDR methods are less preferable because they take a longer time to be effective.

Afforestation

Afforestation has a few clear advantages to stratospheric aerosol injection and ocean iron fertilization from a utilitarian perspective. As Caldecott et al. (2015) argue, afforestation could be seen as a technique of ‘no regrets’, meaning that it certainly benefits the atmosphere, carries little risks and is quite low cost. Besides that, afforestation projects can have various positive social and environmental side effects. For instance, if the afforestation project is managed well, eco-system deterioration, such as desertification, can be prevented. In addition, afforestation projects can boost employment and provide forest products and other ecosystem services. When designing and implementing an afforestation project, it is important to bear in mind that forests do not only act as carbon sinks and that humans benefit in a multitude of ways from forests. It is important to design afforestation projects that are compatible with these various ecosystem services to promote sustainable development.

The impacts of afforestation on natural and human systems are already quite well known due to the many afforestation projects that have already been implemented (mainly in developing countries). This high level of certainty makes afforestation an attractive geoengineering method from a utilitarian point of view. As Bentham states in his felicific calculus: “The action that will definitely produce pleasure is better than the action that only possibly produces pleasure” (1789, p. 30). Besides that, if an afforestation project results in negative consequences, the adverse impacts will most likely be local. That makes afforestation projects less risky than geoengineering schemes that have global effects.

However, it is also quite certain that afforestation projects will not be adequate to prevent deleterious climate change. Of course, afforestation projects can contribute to moderating anthropogenic climate change, but mitigation measures or other geoengineering methods, or a combination of both is necessary to fully address anthropogenic climate change.

Ocean iron fertilization

Ocean iron fertilization scores poorly on Bentham’s criteria. The technology is most likely not very effective in addressing climate change. As explained before, ocean iron fertilization aims to counter climate change by stimulating the biological carbon uptake of the ocean. However, the lion’s share of all the carbon taken up by phytoplankton will not be sequestered in the ocean sediments, but will instead be released back to the atmosphere within a short time frame.

In addition, the geoengineering scheme has some serious safety issues. Ocean iron fertilization can lead to anoxia in the subsurface ocean, which may result in dead oceanic zones, and/or increased ocean acidity, which can negatively impact ocean ecosystems.

Moreover, ocean iron fertilization is, compared to afforestation and stratospheric aerosol injection, relatively expensive, especially when including material costs and costs for potential fisheries loss. Taking all factors into account, it can be concluded that ocean iron fertilization has no real advantages over the other geoengineering schemes. Therefore, from a utilitarian perspective, it can be argued that deploying ocean iron fertilization is not morally justified. However, there are still many uncertainties and this analysis depends on current knowledge. If research discovers ocean iron fertilization methods that can safely store the carbon for a long time in the ocean sediments, the outcome of this ethical evaluation could change.

#### It’ll collapse whole oceans---extinction

Dr. Ian Hendy 17, PhD in Trophic Marine Biology, Research and Communication Officer and Senior Scientific Researcher in Marine Ecology at the University of Portsmouth, Institute of Marine Sciences Laboratories, “Gulf of Mexico 'Dead Zone' Is Already A Disaster – But It Could Get Worse”, Phys Org, 8-14, https://phys.org/news/2017-08-gulf-mexico-dead-zone-disaster.html

Fish and other mobile sea creatures are able to escape the suffocating dead zone. Less lucky however are the sponges, corals, sea squirts and other animals who live their lives fixed in one place on the sea bed. Low oxygen levels place them under great stress and we have seen huge mortalities. Such losses will of course ripple up the food web, creating a negative chain reaction of increasing mortality rates in larger and larger animals.

The "dead zone" has grown this year due to increased rainfall in America's Midwest washing ever greater amounts of nutrients into the Mississippi, which ultimately end up in the Gulf. Not only is this a huge conservation issue – the Gulf contains key nursery habitats such as mangrove forests, sea grass beds and coral reefs that benefit adjacent fisheries – but it also has huge consequences for the local fishing economy, particularly the shrimp industry.

Steps are under way to slow down the ecological disaster. Some farmers in the Mississippi basin are using large grassy zones along waterways in order to soak up the agricultural fertilisers and filter out many of the nutrients before they make their way down the Mississippi to pollute the Gulf. However, it remains to be seen whether such measures are effective – and US farmers certainly need to greatly reduce the nitrogen and phosphates they use.

In the century since Muir's death, things have sped up. A larger population demands more food which means more deforestation, more farmland and more fertiliser. The increase demand placed on our land is ultimately affecting the marine environment.

These losses are unsustainable. The marine environment is integral for all life on earth, from an ecological and economic point of view. If we keep losing ecosystem services such as coastal nursery habitats and spawning grounds at this current rate, it will not just be an area the size of a state that is a dead zone, but the whole Gulf, or even whole oceans.

### Geoengineering CP---AT: NETs---AT: OIF---AT: Defense

#### Even small loss of plankton causes extinction---no defense

Goodheart 14, Dr. Goodheart, Editor of the AGR, “Scripps Institute; Global Oxygen Levels Are Dropping In Major Cities And Oceans From A High Of 35% In Geological History; How To Measure Oxygen Levels In Air, Nuclear Energy Creating Acid Oceans”, A Green Road Journal, 3-20, http://www.agreenroadjournal.com/2014/08/global-oxygen-levels-are-dropping-to-as.html

Cyanobacteria have been involved in all 5 mass extinction events. We are at critical mass. We are losing the Earth. Although much information is available, Phil Plait presents at a unmatched level of understanding. Clear, precise, and on a lay-mans level. Via Marushka France oxygen levels gave rise to life forms that needed oxygen...declining oxygen levels will, therefore, see declines in populations that need oxygen... http://en.wikipedia.org/wiki/Great\_Oxygenation\_Event Great Oxygenation Event - Wikipedia, the free encyclopedia The Great Oxygenation Event (GOE), also called the Oxygen Catastrophe In other words, as oxygen levels drop, the balance of life shifts to life forms that don't need oxygen to survive and thrive. The dead zones in the ocean do have life in them, just not the kind of life that thrives in oxygen. PERCENT OXYGEN IN AIR l live in an 'ocean' of air, just like sea creatures live in an ocean of water. All living creatures, plants, animals and humans live in the troposphere, which is the lowest level of atmosphere that surrounds the Earth in a very thin and fragile layer. The amount of oxygen is delicately balanced with the amount of CO2 in a mysterious formula that has taken millions of years to evolve to where it is today. Upsetting that balance creates havoc in all kinds of ways, in many directions. Video; https://www.youtube.com/watch?v=xQNl2EdteDE 7 min. The web of life depends on a healthy and high level of oxygen in the atmosphere, which sustains almost all life on Earth. WHAT IS THE NORMAL AMOUNT OF OXYGEN IN THE ATMOSPHERE? Professor Ian Plimer of Adelaide University and Professor Jon Harrison of the University of Arizona concur. Like most other scientists they accept that oxygen levels in the atmosphere in prehistoric times averaged around 30% to 35%, compared to only 21% today – and that the levels are even less in densely populated, polluted city centres and industrial complexes, perhaps only 15 % or lower. http://www.theguardian.com/commentisfree/2008/aug/13/carbonemissions.climatechange What is accepted and known by most scientists, is that oxygen levels are dropping, and that CO2 levels are rising in both the air and oceans all around the world. Atmospheric Oxygen Levels Are Dropping Faster Than Atmospheric Carbon Levels Are Rising http://disinfo.com/2013/01/atmospheric-oxygen-levels-are-dropping-faster-than-atmospheric-carbon-levels-are-rising/ HISTORICAL OXYGEN LEVELS Oxygen has made up as much as 35% of global atmosphere in terms of geological history, but has been declining due to many causes. Recent declines are due to human intervention. Via Sandy LeonVest; The oxygen crisis; Could the decline of oxygen in the atmosphere undermine our health and threaten human survival? Around 10,000 years ago, the planet's forest cover was at least twice what it is today, which means that forests are now emitting only half the amount of oxygen. Desertification and deforestation are rapidly accelerating this long-term loss of oxygen sources. The story at sea is much the same. Nasa reports that in the north Pacific ocean oxygen-producing phytoplankton concentrations are 30% lower today, compared to the 1980s. This is a huge drop in just three decades. http://www.theguardian.com/commentisfree/2008/aug/13/carbonemissions.climatechange THE KEELING CURVE; MEASURING OXYGEN AND CO2 CONTENT IN AIR AND OCEANS The Scripps Institute reports on the decline in oxygen levels globally, both in the air and in the oceans. https://www.youtube.com/watch?t=129&v=6WFCoJgt71A 5 min. After two decades watching atmospheric oxygen levels drop, a Scripps researcher's conclusions about climate could leave one feeling light-headed. On the CO2 side, levels have crossed a negative tipping of 400 PPM. Everything in Nature is in balance, and the balance has been upset by human caused man made carbon emissions of various kinds, including radioactive carbon from nuclear plants. Radioactive Carbon 14 From Nuclear Power Plants Causing Deforestation, Fungus Infections, Disease And Death Of Trees, Humans, Animals And Plants Globally - Plus Global Warming Effect http://agreenroad.blogspot.com/2014/05/carbon-14-emitted-by-nuclear-power.html GLOBAL OXYGEN LEVELS ARE DROPPING, PER MEASUREMENTS TAKEN BY SCRIPPS INSTITUTION OF OCEANOGRAPHY AT U OF CA Scripps Institution of Oceanography (SIO), University of California at San Diego reports global oxygen levels in atmosphere are dropping slowly, but steadily. mlo O2/N2 flask data http://www.esrl.noaa.gov/gmd/obop/mlo/programs/coop/scripps/o2/o2.html The reason for the spikes is due to plants absorbing CO2 during the spring and summer and then during the winter, the CO2 levels increase, thus creating a sawtooth pattern. What the graph shows is that the plants and algae that 'eat' CO2 cannot keep up with the amount of CO2 produced by humankind through burning of 1 cubic mile of oil per year, on top of the clear cutting of huge areas of forest. The oceans also contain an important oxygen generator for the planet, and that form of life is also experiencing a mass die off due to human causation. Via Frank Mancuso ....This June it was discovered that phytoplankton is ingesting marine micro plastic. As marine plastic decomposes it absorbs PCB's spelling the demise of phytoplankton. Phytoplankton has declined by 40% and was supplying over half the worlds oxygen, but since the decline both ocean oxygen and atmospheric oxygen levels are dropping. 2 or 3 percentage points will end all life on the planet. It is irreversible and happening rapidly as evidenced by world wide beachings of toxic suffocating ocean life forms. Every estuary, river, and stream is now inundated with storm drains which drain all the filth, plastic, medical waste, oil, toxins into our oceans quite legally. This practice must be stopped TODAY, BUT government bought and paid for by CEO's block all attempts to correct this, potentially the most serious issue facing mankind today.﻿

### Geoengineering CP---AT: Total Techno-Adaptation

#### Techno-adaptation is unsustainable AND immoral---complexity AND termination shock

Lauren Adele Holt 21, Centre for the Study of Existential Risk, “Why Shouldn’t We Cut the Human-Biosphere Umbilical Cord?,” Futures, vol. 133, 10/01/2021, p. 102821

1. Introduction

The condition of the Earth System is deteriorating (Ceballos et al., 2015). Modern human activity has pushed our planet away from the relatively stable conditions of the Holocene in terms of climate change, land use change and biogeochemical flows (Steffen et al., 2015). We are already experiencing food shortages, extreme weather, unprecedented wildfires, mass extinction of plants and animals, growing ocean ‘death zones’, and widespread desertification (Burrell, Evans, & De Kauwe, 2020). Were we to continue along this trajectory, things could quickly become far worse and there may be horrors we cannot now even imagine down the road (Rocha, Peterson, Bodin, & Levin, 2018; Steffen et al., 2018).

These changes could turn our planet into what Tim Mulgan calls ‘a broken world’, “a place where resources are insufficient to meet everyone's basic needs, where a chaotic climate makes life precarious, where each generation is worse-off than the last, and where our affluent way of life is no longer an option” (Mulgan, 2015). Life in such a world may eventually be not worth living. Yet, as we know, these problems are largely man-made, with activities such as deforestation and the unbridled burning of fossil fuels killing the biosphere (Brondizio et al., 2019). So, in addition to the non-human lives being irreversibly lost, we are threatening our own access to the good life, as well as that of future generations. Much policy on conservation and environmental management rests on the utilitarian argument that degrading the biosphere is bad as it harms present and future human lives (Dasgupta, 2021; Singer, 2011), but this tacitly assumes our dependence upon it. This paper will go on to examine the moral implications of environmental destruction if this reliance were to change and speaks directly to long-termist or transhumanist readers; those who are involved with technological and legislative adaptations to climate change; those who are working on genetically-modified or augmented ecologies; and — since it considers the systemic risks of technological adaptation — to the field of existential risk in general. In order to be explicable across these groups, I have used philosophical exploration and speculation about the moral implications of these paths. I end by making the case for preserving an independently functioning biosphere for its intrinsic value and as the least risky course for humanity.

Most sensible moral theories will describe a broken world as bad and hold that we should act to avoid it if we can (Blackburn, 2005). However, the future holds out many possible trajectories for humanity and the biosphere, from techno-utopianism to eco-primitivism, some of which are mutually exclusive. Quite apart from the difficulties of persuading people and organizations to do what is necessary to prevent disaster, moral philosophy is in the position of being able to help people decide which of these possible futures we should be trying to bring about. So, what ought we to do?

2. The allure of techno-adaptation

One answer to this question has been gathering steam as of late and although it has featured in science fiction (e.g. ‘Blade Runner 2049’ (Villeneuve, Ford, Gosling, Armas, & Warner Home Video (Firm), 2018)), it has not yet, to my knowledge, been explicitly defended in the philosophical literature. In this approach, rather than attempt to reduce and reverse our impact on the planet’s biosphere, such as by greatly reducing carbon emissions and undertaking massive reforestation projects, we are permitted (perhaps even required) to engineer replacements such that humanity no longer depends on the independently functioning biosphere for our sustained wellbeing (Lynas, 2011). Having thus achieved this alternative foundation for our civilization rather than relying on the environment that first nurtured us — and having achieved a decoupling of sorts — we will (presumably) be less vulnerable to fluctuations and disasters that might befall the Earth System, whether human-induced or otherwise. Ethical considerations from the discipline of geo-engineering are highly relevant to this argument since geo-engineering represents a first step along a technologically-adapted path. However, the position I am outlining is of a more extreme form, envisaged as either total human control or replacement of the biosphere and/or separation from it, and therefore likely to occur only in the much further future.1

I will refer to this by a new term; the ‘Techno-Adaptationist View’. The main idea being: if technology can reliably replace our dependence on the planet, either through our separation from it our adapting it to our impact without incurring an equal or greater moral cost, then planetary degradation is no longer morally wrong. That we will use technology to overcome Earth’s carrying capacity has been referred to in other literature as a techno-fix (Huesemann & Huesemann, 2011), technological-optimism (Segal, 1994), or techno-utopianism (Segal, 2012), with a long-standing history of being the solution to a Malthusian crunch (Boserup & Chambers, 1965).

Existential risk studies is often concerned with the far-future,2 and in practice the discipline focuses primarily on the survival and flourishing of the human species (although the most widely cited definition of existential risk describes merely threats to “Earth-originating intelligence”, (Bostrom, 2013). As such, by what means (technological or otherwise) we secure humanity’s survival through the upcoming environmental and climatic crises and beyond is of prime importance to this field. Yet, survival aside, the concept of a good future and human flourishing varies considerably amongst x-risk scholars.3 Techno-adaptation as described by this paper need not involve transhumanism,4 but human flourishing and stability is understood amongst those who seek a transhumanist future, and in some limited subsections of the existential risk community, to be inseparable from ‘technological maturity’ — involving the successful achievement of both Artificial Intelligence (AI) and space colonisation. For x-risk scholars space colonisation is inarguably a way of reducing the risk of total human extinction should something terrible befall Earth (Bostrom, 2013), and, in a future which contains the tools for extensive human modification, space travel, and terraforming, widespread ecological modification or loss of the Earth’s biosphere could be survivable.

Therefore, when considering the Techno-Adaptationist View i.e. a world where critical biological services (Avin et al., 2018) could be provided by non-natural systems, x-risk scholars would be forced to count natural ecological systems as non-critical (S. Avin personal communication). This paper is therefore an attempt to: analyse and explore the ethical implications to the Earth’s biosphere should natural systems become non-essential to human survival; outline the risks involved in this path; and question whether ecosystem degradation could be morally acceptable in order to ensure survival of humanity at the species level.

I would like to stress that positive attitudes towards interventions such as geo-engineering and ecological augmentation also appear amongst biologists, with theorists including Mark Lynas (2011), Peter Ward (2009), David Grinspoon (2016) and, to an extent, Tim Lenton (Lenton & Latour, 2018) and Donna Haraway (2016), advocating for a future where humanity is consciously integrated into earth processes. In Haraway’s case, this would even include extensive cross-species genetic transfer from animal to human to avoid genetic information loss through extinction — a form of ‘green transhumanism’. Although it is beyond the scope of this paper to adequately pose a cultural critique of technology, technologists and those who advocate technologically mediated ecologies, it should be acknowledged that — despite the attractions of climate control and profound genetic enhancements — such a future would not likely be the choice of all or most peoples, including future people, when contrasted against a restored biosphere and healthy human populations (Kimmerer, 2013). It is not ethical for a small segment of society to make irreversible decisions for the whole biosphere and all future generations, a point of contention in current geo-ethics regarding climate change, and germ-line genetic engineering (Sinha & Sinha, 2018). Nor is a world that contains super-intelligent AI or some of the other visions for advanced technological maturity considered by all as the best of all future worlds no matter the cost (Harrison, 2015). Toby Ord (2020) has made an admirable suggestion of a ‘long reflection’ to equably contemplate the future of humanity. However, collective action would be required to correct the current ecological crisis prior to such a global reverie. Taking first-steps towards profound ecological modification as explored in this paper is undoubtedly one of the possible responses to increasing climate and ecosystem disorder and may be started unilaterally by nations with sufficient technological capacity in the very near future.

For, above cultural considerations aside, the Techno-Adaptationist View is far from indefensible and in many ways, many global decision-makers already behave as if it is both acceptable and required. Genes are being modified to increase the resilience of agricultural species to environmental change, scientists are devising ways to synthesize otherwise naturally occurring ‘ecosystem services’ such as pollination and biogeochemical flows, and urban planners and public health professionals are working to protect people from current levels of air and water pollution. Furthermore, farming of fish and livestock is undertaken to supplement or replace wild-caught animals; this not only represents a form of decoupling from ‘natural environments’ but is required to meet the essential protein needs of the current human population. However, these ventures are being taken, it often seems, in preference to alternative actions for preserving natural ecosystem services, such as restoring habitats, replenishing fish stocks, and eliminating the causes of air and water pollution. As intensive forms of extraction and production expand, the wider environment acts as somewhere to sequester negative externalities, irrespective of whether it can adjust unassisted to the change.

As such, scientists, architects, and technologists are compelled to work on ever more profound ‘fixes’ to preserve our pursuit of the good life from a collapse of the Earth System, such as: solar geoengineering to alter the temperature of our planet; microbe-based agriculture that can enhance photosynthesis to grow food under artificial light underground; and even ‘sea-steading’ to move entire communities offshore. A few are now seriously considering abandoning Earth altogether and are taking the tentative first steps towards that end with Mars-bound spaceships. More radically still, some are considering the possibility of either bioengineering humankind to withstand future extreme conditions or, assisted by AI, accelerating towards a digital transhuman state which would require little in the way of a functioning biosphere or breathable air (More & Vita-More, 2013).

I suggest that the current trends of these projects and the accelerating ecological crises point to at least three possible scenarios for advanced Techno-Adaptationist ecologies, increasing in their extremity:

1.Where living matter remains in situ, but atmospheric processes and ecosystem services are controlled and directed by humanity’s advanced technologies, and/or humans and wild animals require constant technological assistance or modification to survive in an increasingly dysfunctional world.

2. Where some ecosystems (modified or otherwise) are preserved in biomes, but the global atmosphere is inhospitable, and humans live in protected cities or underground.

3. Where humans and any remaining domestic animals on Earth are either completely genetically modified or digitally replicated, with all other life and functioning biosphere having since disappeared (either through extinction or leaving the planet).

There are, therefore, two types of future scenarios: those where humanity has essential control of the biosphere, its processes, ecosystems and organisms, adjusting them to absorb or tolerate waste-products and changing the climate; and those where humanity is protected or absent, but the biosphere has been allowed to degrade or has been exhausted to provide for humanity’s expansion. With perhaps the exception of particularly utopian visions of scenario 1, for example where animal suffering is reduced through extensive control,5 is doubtful that most people find these visions attractive. Most would certainly not, for example, wish to wear anti-pollution masks or receive genetic modifications if they could instead breathe pollution-free air. Furthermore, the idea of humanity having to either prematurely leave Earth or become transhuman merely to survive could be seen as positively dystopian.

However, not all human interventions in the Earth System seem bad, let alone wrong. It is a well-worn, sobering fact that all life on this planet is doomed once the Sun exhausts its finite supply of hydrogen and enters its subgiant phase (Rybicki & Denis, 2001). If either humanity or any other Earth-originating species is to survive beyond the next billion or so years, then we must find a way of avoiding this fate, and we are (as a species) likely to need to take action far before then to endure both the Sun’s increasing luminosity and other inescapable macro-scale changes (Ward & Brownlee, 2004). Drastically altering Earth’s biosphere, colonizing another planet or even constructing artificial planets of our own may offer our best hope of long-term survival (although this is not without its own problems, see Torres, 2018). Humanity — and by proxy all other Earth-originating life’s — long-term survival and flourishing cannot depend on this planet forever.

Why then wait for things to get worse, or for some cosmological or global catastrophe before cutting the human-biosphere umbilical cord? If we can take control and win independence sooner, what's stopping us? For instance, why not pursue techno-adaptationism as a response to climate change or global hunger? What does it matter if people are fed by food grown in labs and underground farms, so long as they are reliably fed? If changing the ultimate source of that food avoids pests, drought, famine and various other threats, wouldn’t the benefits outweigh the harms, especially if the land freed from this could in theory be given ‘back to nature’ (Tzachor, Richards, & Holt, 2021), and animal suffering reduced as in the case of lab-grown meat? While the question of causal responsibility for existential threats may be relevant to who should bear the cost of either repairing the mess and/or innovating new forms of food production — i.e., is it anthropogenic or natural forces that pose the greater risk of food insecurity? — this is arguably irrelevant to what we ought to do in response. To build upon an apt phrase from Denkenberger and Pearce (2014), the correct goal is neither growing food in the wild nor punishing the wicked but instead “feeding everyone no matter what”.

Despite the aforementioned scenarios being predicated on current destructive trends, in order to ‘steel-man’ the Techno-Adaptionist View, I suggest there may be two outcomes of the future scenarios where it could be argued conscious control and/or decoupling could be a major good. They are as follows; a) a green techno-mediated or transhuman future as suggested by Haraway, and to a lesser extent Lynas and Lenton, the latter proposing with Bruno Latour a ‘Gaia 2.0.’ (Lenton & Latour, 2018). These authors acknowledge that we have never been separate from Earth’s processes, and since we have inadvertently been influencing the biosphere on a grand scale for thousands of years, in the words of Stewart Brand “We are as gods and might as well get good at it” (Turner, 2010). However, despite this representing an optimistic version of ‘scenario 1’ it is subject to many of the same inherent risks such as dependence on human intervention, systemic fragility, and risk of error; and b) In light of our damaging relationship to the rest of the biosphere, humanity should voluntarily isolate itself, perhaps in vast cities or even in a transhuman silicon-based state similar to those painted in scenarios 2 and 3. However, in this case the material decoupling would allow ecosystems and the atmosphere to recalibrate, rewild, heal, and live without our interference (Monbiot, 2014). This is more likely to be successful once we have switched to a clean energy infrastructure, or when any necessary food production can be focussed within cities and urban bioreactors.6 Here, the umbilical cord may indeed be cut, but for the health of ‘Mother Earth’.

To be sure, humanity couldn't successfully cut the human-biosphere umbilical cord anytime soon; for now, it still behoves us to be good to the Earth in order to survive. But our relationship with the planet may someday fundamentally change. The questions this paper addresses are focussed primarily on scenarios where humanity has materially decoupled. I explore whether a future, technologically mature global civilization should take care of the Earth System if it no longer instrumentally depends on either the biosphere or indeed the planet for its ongoing survival and flourishing?

2.1. The moral argument in favour of techno-adaptation

The Techno-Adaptationist View cannot be dismissed out of hand. However, as it has not to my knowledge received a careful treatment, I begin by formulating the argument that supports it. The strongest argument for supporting this view goes as follows:

1. Falling within the scope of exploratory engineering are man-made tools that reliably both (a) replace or control Earth's biosphere as a supplier of ecological services and (b) shelter us from a dangerous environmental change.

2. Securing a safe long-term future for our species by replacing or controlling Earth’s increasingly degraded biosphere with these man-made tools is at least as choice-worthy7 as taking action to allow the biosphere to regenerate naturally.8

From these follow the conclusion that:

C. Achieving independence from a degrading biosphere with these man-made tools is at least permissible and potentially required of us.

Of these two premises, it seems that the first is too technical and falls largely outside of the scope of this paper, although I would posit that a) managing a functioning biosphere of the current complexity is likely to be impossible, even with advanced technology such as AI — which of course carries it’s own dangers of being misaligned to the interests of organic life — and b) dangerous environmental change would remain a plausible threat and/or the loss of its self-regulating integrity would expose all life to additional risk. Therefore, I instead consider only the second premise.

It's easy to see how one might defend the second premise (if such independence could be achieved). For instance, either slowing down or halting environmental change through restraint will be very expensive, not only in economic terms but potentially in its impact on people’s material wellbeing and way of life. Plausibly, if man-made solutions immunized humankind against the harms associated with the economic activities that accelerate climate change, then techno-adaption would be better for those who would otherwise be required to forgo the benefits of consumption (although see Dasgupta, 2021 for comprehensive arguments against this assumption). This, at least in theory, provides us with a short-term moral argument against reducing our negative impact on the planet. Nor does anyone appear to be made worse off along the way; bear in mind, according to premise 1, technology will insulate all people from the harms of planetary degradation, even events that humans are not directly responsible for such as massive volcanic eruptions, as the biosphere as we know it falls into dysfunction. Furthermore, we may add that this future civilization would shelter and provide for at least some of the animal kingdom (e.g., enormous domes could be constructed that contain wildlife reserves of all stripes, replicating conditions in the different biomes to which they belong). Therefore, we appear to have a moral reason to achieve independence from the Earth System and reasons against re-stabilizing the biosphere. At first blush, premise 2 is true.9

There is one further argument in favour of techno-adaptation, even of the speculative futures which involve complete biosphere loss; that it is the ‘purpose’ of the planet to evolve an intelligent life form capable of leaving and seeding life elsewhere in the Universe.10 An endeavour that would unavoidably require advanced technology and a heavy (perhaps even complete) material investment from planet Earth. Moreover, this could be considered a wholly natural phenomenon; migrating between ecosystems being what any organism would strive towards, especially in times of resource stress. Whilst too teleological for some, this view has long been explored in fiction such as Octavia E. Butler ‘Parable of the Sower’ (1995), and ‘Parable of the Talents’ (1998). Similarly, in his book ‘The Invisible Pyramid’, nature writer Loren Eiseley uses a metaphor from nature to examine environmentally damaging human activity:

“It came to me in the night, in the midst of a bad dream, that perhaps man, like the blight descending on a fruit, is by nature a parasite, a spore bearer, a world eater. The slime molds are the only creatures on the planet that share the ways of man from his individual pioneer phase to his final immersion in great cities. […] At the last they thrust up overtoppling spore palaces, like city skyscrapers. The rupture of these vesicles may disseminate the living spores as far away proportionately as man’s journey to the moon.” (Eiseley, 1998, p.53).

3. Why extreme techno-adaptation is undesirable

Despite the arguments above, I posit accepting premise 2 would be a mistake. Even if it were true, premise 1 only guarantees that services that both sustain and protect the remaining life on this hypothetical planet, human and otherwise, will be available as long as human civilisation is functioning, and advanced technology is still around. What happens if, through either our own extinction, a technological disaster or the aforementioned planetary exodus, this is no longer the case?

The potential for human extinction, for example, is no fantasy. Human progress is plagued by existential risk; this is to say, risks “that threaten the premature extinction of Earth-originating intelligent life or the permanent and drastic destruction of its potential for desirable future development" (Bostrom, 2013). Not only do these threats come from naturally occurring and anthropogenic environmental changes but also new technologies, such as AI or nanotechnology (atomically precise manufacturing). While these advancements are often beneficial, they may also prove harmful, and in some dire scenarios endanger the human race. Bostrom (2019) has recently proposed a fivefold classification of possible scenarios in which humanity could bring about its own demise quite independently of reliance on the Earth System. I would add further to this list, that the more we rely on novel technology itself, or use it to replace or control the natural ecological services required for us to thrive, the greater the chance that either the technology itself could fail us or the systemic fragility of such an arrangement could cause disaster. Whilst it’s true that being wholly dependent on an unmediated ecosystem contains its own risks and vulnerabilities, automation brings in a different category of threat. However, it matters not in the least what specifically does us in, nor how those odds are influenced by shifting our dependence from a functioning Earth System to man-made replacements, but only that there's some chance our technologically mature civilization could end, or that humanity may abandon the planet.

Conceivably, if our civilization allows the planet to degrade beyond a tipping point, such as by reducing biodiversity to a level where ecosystems start collapsing at a global scale or pushing the global climate beyond the point at which the biosphere remains under homeostasis, then life may indeed only be capable of surviving on Earth with constant and significant intervention (Lovelock, 2019). Yet, even if we manage to control the biosphere, after we are gone the man-made systems we set in place would likely collapse, and soon thereafter the planet, having been stripped of its independent resilience qua organic complexity or genetic self-determination, will become a climatically dysfunctional, lifeless place from which no further Cambrian explosions or even basic recovery may be possible. The term ‘termination shock’ (Parker & Irvine, 2018) has been used in geo-engineering to describe the sudden increase in temperature should Solar Radiation Management (SRM) be employed and abruptly withdrawn whilst CO2 levels continue to rise. The risk with large-scale management of ecosystems as described by the Techno-Adaptionist View is similar but occurs on multiple levels simultaneously, potentially resulting in a much larger effect and cascading collapse.

Given a significant enough perturbation, climate change can conceivably move into a runaway, self-reinforcing scenario when ecosystems undergo a simplification and living organisms are unable to swiftly or sufficiently adapt to the new conditions, which are likely to be extreme in comparison to the initial state (Steffen et al., 2018). Even moderate changes may be too rapid for organisms to adapt to, either by modifying their range or through natural selection adapting their physiology. These difficulties may be intensified in a world with a huge human population, a feature that was absent from the other mass-extinction events. There are plenty of serious positive feedback loops involved considering only at the interactions between non-human biotic and abiotic elements, without considering actions humans might undertake that would inadvertently make the climate situation worse (Beard et al., 2021), particularly in crisis scenarios, and potentially resulting in a ‘global systems death-spiral’ (Monbiot, 2018). Therefore, it is not unreasonable to assume that even if humanity figures out a way to technologically protect and isolate itself, it is conceivable that the rest of the biosphere may either be sacrificed in the process or be unable to survive in the aftermath.

Biosphere collapse may sound far-fetched, but as with the future of our own civilization and species, there is no law of nature that guarantees the future survival of Earth’s biosphere given the level of stress it is currently under. Massive asteroid impacts notwithstanding, all previous mass-extinction events have constituted a change in composition of atmospheric gases accompanied by temperature change and either the loss or gain of ice sheets. In addition, this is often accompanied by ocean acidification or eutrophication, processes that are already well underway in the 21st Century. Furthermore, Ward argues (Ward & Brownlee, 2000) the universe itself is fundamentally hostile to complex life — although microbial life is hypothesized to be relatively more likely — and as a result other planets containing multi-cellular organisms are extremely rare.11 Surely, all the more reason to cherish planet Earth and recognise its existence against the odds?

Even if we were to be bullish in our hopes that our protective technology would work perfectly and humanity survives for the remainder of Earth’s habitable phase, perhaps the strongest criticism of even the mildest forms of techno-mediated future (as for example with geo-engineering) is that they would constitute a moral hazard to the remaining biosphere (Hale, 2012). Recent technology has thus far primarily made humans deadlier and more successful. Global capitalism, which has both allowed and sustained this unsustainable growth “has made the depletion of resources so rapid and convenient and barrier-free that ‘human-earth systems’ are becoming dangerously unstable in response” (Werner, 2012). The likelihood that the ability to adapt the climate or ecosystems or our independence from them would not result in further degradation and pollution of the biosphere seems low under current mores.

Readers will be familiar with the ways in which humans have to date ruthlessly extracted from and damaged the biosphere, so I will not belabour the point. The strength of the argument depends only the plausibility that it is still possible to instead, in the majority of cases, replenish and regenerate damaged ecosystems that would buffer against anthropogenic environmental change. Furthermore, it seems likely that a concerted effort to restore the biosphere using its own materials is far easier than what would be involved in a techno-adaptationist restructuring, since the latter would involve technological innovations and re-organisation on a grand scale.

To summarize, even if humanity were to follow a techno-adaptationist course that protected human and some animal life from the negative effects of biosphere collapse, such a system would be both vulnerable to malfunction or error (i.e. increased systemic risk), and dependent on constant human intervention, since in all the examples of techno-adaptation outlined the biosphere and atmosphere have been allowed to degrade to a point whereby its independent homeostasis is not possible. Unless one is (mistakenly) of the mind that human life alone is of value, it should trouble you greatly that, were a future technologically-advanced civilization to collapse or malfunction, Earth might remain an empty wasteland for the remainder of its existence, potentially hundreds of millions of years, when it needn't have.

3.1. The benefits of an independently functioning biosphere

Why should losing an independently functioning biosphere be troubling? Most significantly, there are the other species that call our planet home and would have continued living and evolving as long as the biosphere provided conditions viable for their existence. Even if the Techno-Adaptationist future proceeded without disaster, there would likely be much irreversible species loss and modification, depriving each species of their future light-cones and autonomy, their existence reduced to that akin to living in a gigantic zoo with compromised genetic integrity. Currently unborn human generations would also face a future that contained fewer and/or altered options for interacting with the non-human. The construction and constant management of such infrastructure would also constitute a massive opportunity cost for humanity which presumably would have had better things to do than take control of vast ecological systems that, when healthy, maintain themselves.

Preserving an independently functioning biosphere would also provide a nurturing environment if small groups of surviving humans were to flourish again after a catastrophe such as civilisational collapse, even if previously materially decoupled as in the aforementioned positive sub-scenario ‘b’. However, even if humanity were to perish entirely, with a functioning biosphere new intelligent species with their own civilization may rise from our ashes and manage to do better than we have.

Going even further, we may believe that there is intrinsic value in our planet as a whole, even if devoid of human life, and that for instance, a lush, green Earth is intrinsically more valuable than an ugly, scorched Earth (see Moore, 1988, Sorensen, 2005). Perhaps it is easy to dismiss such views as trivial or emotional, yet they may be amongst the most universal of all human value judgements and extend to other sentient beings as well. Many of us do love and value the beautiful world we live in, not merely for utilitarian or instrumental reasons (Kellert, 1995) and would like it to continue to exist even if we were not around to enjoy it.

Earth is a complex and rare place (Ćirković, 2012). No other astrophysical entity is known to harbour life. Even if we are overly confident about the long-term survival of a technologically mature human civilization, one able to happily persist on a degraded planet, the moral stakes are huge. High-stakes, low-probability outcomes deserve and command our attention. Consider an analogy: the local weatherman has said there's a tiny chance of rain, but in this case, it will be life-threatening, toxic acid rain. Even though you've only a small chance of being caught in this downpour, it would be so bad if it did that it's rational for you to bring your clunky, shockingly uncomfortable umbrella along anyway. Similarly, given the stakes, we have immense reason to preserve the potentiality and resilience of life in our absence. This consideration, I submit, makes achieving extreme independence from the Earth System significantly less choice-worthy than the alternative, considered below, of restoring the planet's biodiversity and leaving it broadly to its own devices. Therefore, premise 2 is false and the argument in favour of the Techno-Adaptationist View unsound.

4. Alternatives

To fully support the claim against techno-adaptation, I would need to provide a comprehensive evaluation of all possible future trajectories. This is a difficult task and impossible to do in entirety. However, I will propose, albeit in a general sense, an alternative to the technologically-mediated transformations of the relationships between humans and natural systems outlined in this paper, even the relatively positive examples of sub-scenarios ‘a’ and ‘b’ mentioned previously.

I consider the most viable future to be one where we not only build back the independent complexity and resilience of the natural world, but then step back and remove as much as possible our conscious control of it, trusting it to maintain its own integrity as a billions of years, stressed-tested ‘super-organism’ (Lovelock & Margulis, 1974). Furthermore, it would likely be advisable for humanity to remain at least partially materially coupled to the biosphere as this represents a form of ‘putting skin in the game’, and thus reducing moral hazard. Although this is framed in risk-reduction terms, personally I can also imagine this to be the most biophilic and aesthetically satisfying future (Wyborn et al., 2020).

In the event, making a commitment to staying until the end of Earth’s habitable phase before becoming spacefaring, or decoupling earlier and degrading the biosphere, need not be either/or scenarios. For example, prior to a point of forced departure it is certainly unlikely that all of humanity will share the same aspirations to leave the planet, unless conditions have become truly unpleasant. Similarly, the infrastructure required to become spacefaring needn’t necessarily exhaust the planet,12 and this would be especially important if a portion (or even majority) of humanity decides to remain Earth-bound.

Readers will likely argue that it is likely a degree of ‘techno-fix’ is already a reality and necessary, if only in terms of food production, and I would agree. Nonetheless, I still suggest an ecologically protective vision as the most desirable future pathway not only because I believe a resilient biosphere is the best hedge against existential environmental risk, but also because of the issue of what separation itself does to the human psyche. Even if there is a future scenario where we separate ourselves as much as possible from areas where biological processes are allowed to reassert themselves (sub-scenario ‘b’) I would suggest that whilst this may be a success for nature, it represents a fundamentally negative change for humanity (see the epic space poem ‘Aniara’, Martinson, 2016). Humans suffer when separated from nature, leaving Earth to colonise relatively barren planets may cause a significant drop in wellbeing for those involved. Although this phenomenon is likely something very fundamental to the experience of being an embodied entity, we may speculate that humans limited to Artificial Reality (AR) or ‘digital transhumans’ may experience something similar.

5. Concluding remarks

Although I lack the space to expand further, I believe that the arguments presented here still matter in moral terms. As Derek Parfit argued:

“When we ask whether the existence of human beings will have been, on the whole, good, we may not believe that either answer is more likely to be true. Given what some animals endure, we may have similar doubts about whether it is good that there are other conscious beings on this planet. We don’t yet know whether there is conscious life elsewhere. We may thus have no idea whether the existence of the Universe is on the whole good. This ignorance, however, would have little practical importance. Our practical question is Q4: What ought we to do?” (Parfit, 2011)

If humanity wholesale leaves the planet before conditions would have made it uninhabitable for any living being, unless one subscribes to the idea that humanity are the ‘spore-bearers’ and are fulfilling the destiny of the planet as the ‘unit of selection’, morally it seems unjust to ‘ghost the planet’ after causing a partial or complete ecocide (Higgins, 2019). Such a decision would be the opposite of, as Haraway (2016) has suggested, “staying with the trouble”. Another way of framing it is that morally we would not be ready to ‘cut the cord’ and become a spacefaring civilisation until we had found a way to live on the planet we do have without causing widespread destruction. Otherwise, who knows what damage we might do in the wider Universe.

Of course, one hopes our civilization never collapses and subsequently goes extinct. But if Death does come knocking at our door, then it seems that we will have acted far better if we have not cut the human-biosphere umbilical cord until absolutely compelled to do so by forces beyond our control. It may not be merely the extinction of humanity, as Henry Sidgwick first proposed, but loss of the entire biosphere and the atmosphere it supports that truly constitutes “the greatest of all conceivable crimes" (Sidgwick, 1907).

Finally, it is certainly true that we must rely on technology and human ingenuity for many things. Vaccines are an inarguable good, and leveraging technology to restore ecosystem complexity, perhaps by liberating a portion of land from farming via urban or synthetic food production in order to re-wild, would also be a noble endeavour. Such a ‘conscious decoupling’ may indeed be a desirable future (Rees, 2018). But no matter how powerful we become as a species, we would be ill-advised to rely on human ingenuity alone, and for the reasons outlined, should take care of the biosphere. And later, if we become a space-faring civilization on the brink of exploring the entire Milky Way galaxy, we should also be good to other potentially habitable planets we encounter along the (Armstrong & Sandberg, 2013).

### Green New Deal CP---2AC

#### GND doesn’t solve the contradiction between growth and sustainability.

Mastini et al. 21, ICTA-UAB, Universitat Autònoma de Barcelona, “A Green New Deal without Growth?,” Ecological Economics, vol. 179, 01/01/2021, p. 106832

4. Differences on the question of economic growth

A main source of friction between GND 2.0 and degrowth is the question of economic growth. Some proponents of the GND see growth as both the engine and a result of the ecological transition. While H.R. 109 does not explicitly mention economic growth as a policy objective, the idea is implicit in the text given its goals to “spur economic development” and “to grow domestic manufacturing”. Three major policy experts associated with the GND debate in the U.S. argue that boosting working class wages and upgrading infrastructure would strengthen economic growth, therefore making H.R. 109 “fiscally responsible” (Talbot Zorn et al., 2019). This idea is problematic from a degrowth perspective because it fails to address the issue of growing energy and material flows.

Pollin's (2018) advocacy of GND on the basis of criticizing degrowth is a good reference for this discussion. Pollin criticizes degrowth because “some categories of economic activity should now grow massively” in the context of the ecological transition. Degrowth scholars however responded to Pollin that they do not argue that certain activities, such as those deemed desirable from a socio-ecological perspective, should not expand (Burton and Somerville, 2019). While necessary sectors expand, less necessary sectors can be scaled down with a possible shrinking of GDP.

One question Pollin does not address is why a renewable energy transition requires aggregate growth. If the objective is to achieve specific kinds of goals, it makes more sense to invest in those directly, rather than to grow the whole economy indiscriminately and hope for a specific outcome. For instance, if the State increases expenditures in order to decarbonize the energy system, this could be used to directly increase renewable energy production (sustainability-oriented policy), rather than to boost aggregate demand (growth-oriented policy).

Pollin (2018) links GND to growth by proposing that GND should be funded with a set share of national GDP, specifically at 2% per annum. Growth is desirable, then, because “higher levels of GDP will correspondingly mean a higher level of investment being channeled into clean-energy projects” (Pollin, 2018). Granted, the higher GDP, the easier it may be to increase investments to renewables, easing competition with other public expenditures. Private investments also, driven by profit as they are, become harder in a context of contraction. But, at least in principle, an increasing proportion of a shrinking GDP could be directed to a clean energy transition, if governments were to take greater control of the direction of investment by a socialisation of strategic sectors. It is not clear, in other words, why a significant investment on a GND cannot be made within stagnant, or even contracting, economies.

Degrowth advocates insist on the importance of financing an energy transition without growth because from a degrowth perspective spurring economic growth in order to increase investment in clean sectors of the economy has undesirable, second order consequences, such as the expansion of dirty economic sectors. Growth is an integrated process and it is hard to imagine how to grow selectively the ‘goods’ while reducing the ‘bads’ (Kallis, 2019a). Furthermore, there are serious concerns whether the growth rates Pollin foresees can be sustained in the long-run, given signs of high-income countries entering a period of secular stagnation.

It is true though that certain financing strategies could make economic growth necessary for funding the GND, such as in the case of green bonds. When bonds have positive yields, governments are obliged to pay interest to bondholders, this requires growing tax revenues. The idea of using green bonds to fund the GND is premised on Richard Kahn's principle of the multiplier (1931): deficit spending should be used to increase growth in order to raise sufficient tax revenues to cover the debts. This is the Keynesian core of the GND narrative and, indeed, it relies on economic growth to avoid ballooning public debt. As Pettifor (2019) puts it, “the GND economy will not be debt-free, but its credit creation systems will be balanced by tax revenues gained from employment, used to repay loans to prevent the build-up of debt and deficits.”

But it could be that it is problematic to resort to deficit spending for funding the GND. As Klein (2019) argues, “any credible GND needs a concrete plan for ensuring that the salaries from all the good green jobs it creates aren't immediately poured into high-consumer lifestyles that inadvertently end up increasing emissions [...]. This is the problem with what we might call the emerging ‘climate Keynesianism’: the post–World War II economic boom did revive ailing economies, but it also kicked off suburban sprawl and set off a consumption tidal wave that would eventually be exported to every corner of the globe.” The ‘public expenditure-growth-tax’ model may not be compatible with ecological principles (Bailey, 2015).

### Green New Deal CP---Perm

#### Pollin is wrong---there is no need to grow to fund renewables investments

Giorgos Kallis 19, ICREA professor of political ecology and ecological economics at ICTA-UAB in Barcelona, “A Green New Deal Must Not Be Tied to Economic Growth,” Truthout, 3-10-2019, https://truthout.org/articles/a-green-new-deal-must-not-be-tied-to-economic-growth/

The Green New Deal bill is an audacious 10-year mobilization plan to move the U.S. to a zero-carbon economy. Bold and ambitious interventions like it are necessary, in the U.S. and elsewhere, if we are to unsettle the current complacency with climate breakdown. Academics like economist Robert Pollin, who kept alive the idea of a Green New Deal in the past years and provided the science to back it up, are to be congratulated for their efforts.

Pollin has for years now proposed his simplified version of a Green New Deal — an investment of between 1.5 to 2 percent of global GDP every year to raise energy efficiency and expand clean renewable energy. This would be the moment for him to celebrate that his cause has been taken up, and contribute to working out the specifics. Instead though, he chooses to focus on the differences between his proposal and a “degrowth agenda,” which he finds “utterly unrealistic” — a waste of time for the Left at best and dangerously anti-social at worst. Whereas this is not the moment to split hairs, Pollin’s insistence on degrowth is inadvertently productive. It lets us see a sore point in the Green New Deal narrative, and this is that it risks reproducing — unless carefully framed — the hegemonic ideology of capitalist growth, which has created the problem of climate change in the first place.

To begin with, Pollin never explains why growth is a necessary ingredient for his proposal. It is not clear why he has to argue that a Green New Deal will be good for growth instead of simply advocating cutting carbon while meeting needs and fostering wellbeing. The only reason he provides for his preference for growth is that “higher levels of GDP will correspondingly mean a higher level of investment being channeled into clean energy projects.” If Pollin seriously means that he shares “the values and concerns of degrowth advocates,” then he could simply tweak his model and come up with a fixed amount of investment (independent of GDP) that would produce the same decarbonization. Higher levels of GDP will not only lead to higher levels of clean investment, but also higher levels of dirty investment — and the majority of investment is dirty. One percent growth in GDP leads to a 0.5 to 0.8 percent increase in carbon emissions, and this is as statistically robust a relation as it gets (clean energy investment has no statistically significant effect on emissions yet, though, of course, this could and should change in the future). If we continue to grow at 3 percent per year, by 2043, the global economy will be two times larger than it is now. It is difficult to imagine creating a renewable energy infrastructure for our existing economy in a short time span, much less doing so for an economy that is two times bigger. The smaller our economic output is, the easier the transition will be.

Pollin may well have chosen to emphasize growth because new deals are about growth. But a Green New Deal does not have to be like the old New Deal. Pollin does not suggest that his investment program should be financed by deficit spending, nor that it should be a short-lived stimulus, repaid by growth. An investment at the level of 2 percent of GDP does not need deficit spending — assuming there is the political will for such a program, it could be financed by replacing dirty or socially useless investments (and there are many, starting with armaments). If there is no extra spending and debt, then there is no need to stimulate growth to pay it back.

### Green New Deal CP---AT: Paris Agreement

#### Paris fails

Joana Castro Pereira & Eduardo Viola 18, Lusiada University; University of Brasilia, “Catastrophic Climate Change and Forest Tipping Points: Blind Spots in International Politics and Policy,” Global Policy, 11/2018, vol. 9, no. 4, pp. 513–524

The limitations of the Paris Climate Agreement

According to CAT,4 the pledges that governments have made under the Paris Conference have a probability of more than 90 per cent of exceeding 2°C and a 50 per cent chance of reaching 3.2°C. This possibility is even more problematic since the countries are not currently on track to meet their pledges. The United Nations Environmental Programme (UNEP 2017) experts suggest that even if all pledges are fully implemented, the available carbon budget for keeping the planet at 1.5°C will already be well depleted by 2030.

There is a serious inconsistency between the 1.5°C goal of the Paris Climate Agreement and the generic and diffuse pathways that were designed to achieve it. Although it can be seen as a diplomatic success, from the scientific point of view the agreement is weak, inadequate, and overdue, indicating very slow progress in decarbonizing the global economy. For twenty-five years now, after multiple conferences and pledges under the United Nations Framework Convention on Climate Change (UNFCCC), global carbon emissions have increased significantly at a rapid pace, and climate change has worsened considerably. The Paris Agreement is insufficient to reverse this path. The weakness of the agreement can essentially be summarized in five points.

1. Due mostly to strong resistance by countries such as the US and India, the Intended Nationally Determined Contributions (INDCs) are voluntary, and there are no tools to punish (not even moral sanctions) the parties that do not meet their pledges.

2. As we have seen, even if fully implemented – which seems very unlikely – the sum of all INDCs have a probability of less than 10 per cent of remaining at less than 2°C and a greater than 50 per cent chance of exceeding 3°C.

3. Due to resistance from countries such as China and India, which consider it an intrusion on their national sovereignty, the system established for monitoring the implementation of INDCs is weak.

4. There are no established dates by which parties must achieve their GHG emissions peaks – only a vague ‘as soon as possible’. Furthermore, the concept of decarbonization was removed from the agreement: there is no reference to the end of fossil fuel subsidies.

5. The Green Climate Fund, which is intended to raise 100 billion dollars per year by 2020 to support developing countries in their mitigation and adaptation efforts – established in Cancun in 2010 and minimally implemented – is part of the agreement. However: (1) the amount of public resources to be transferred, that is, those that could be truly guaranteed, was not defined; (2) these 100 billion dollars represent only approximately 0.4 per cent of the GDP of developed countries and are insufficient to truly address the problem; and (3) the US is the largest contributor to the fund, but President Trump’s decision to withdraw from the agreement indicates that funding for climate programmes will be cut. In addition, with the exception of China, the emerging middle-income countries have refused to commit to transferring financial resources to poor countries, which is particularly relevant since many developing countries (India among them) have made their pledges dependent on international financial and technological support.

It thus seems highly unlikely that the medium and longterm processes established by the Paris Agreement can prevent dangerous climate change. Consequently, the risk of transcending the IPCC’s mid-range RCPs might be far greater than estimates suggest. Nevertheless, GCRs in general and CCC in particular remain neglected in the academic and political realms. Discussions about climate change rarely acknowledge catastrophic climate risk.

### Green New Deal CP---AT: Pollin

#### He assumes renewables will be scaled up---that’s wrong

Giorgos Kallis 19, ICREA professor of political ecology and ecological economics at ICTA-UAB in Barcelona, “A Green New Deal Must Not Be Tied to Economic Growth,” Truthout, 3-10-2019, https://truthout.org/articles/a-green-new-deal-must-not-be-tied-to-economic-growth/

Economists typically justify growth in terms of poverty or stability. Pollin innovates by justifying it in the name of climate change. And this is coming from someone who otherwise sees the irrationality of perpetual growth.

Compound growth is what Marxist scholar David Harvey calls a “bad infinity.” For Harvey, capitalism’s requirement for compound growth is the deadliest of its contradictions. Harvey points to the irrationality of expecting that demand, investment and profits will double every 24 years (this is what a 3 percent growth each year amounts to), quadruple every 48, grow eight-fold every 72, ad infinitum and ad absurdum.

Consider the following: 65 percent of anthropogenic emissions come from fossil fuels. The remaining 35 percent come from things like land-use change, soil depletion, landfills, industrial meat farming, cement and plastic production. Even if the energy mix were to become 100 percent clean and we continued to double the economy every 24 years, we would be back up to our existing emissions levels in short order. This is how irrational the pursuit of compound growth is.

Climate breakdown now threatens to bring this absurdity to an end. But it is not only the climate — biodiversity loss through mass extinction, land-use change and resource extraction are all directly linked to economic growth. Despite his claims to the contrary, there is no prospect of what Pollin calls “absolute decoupling,” or a reduction of these impacts while the economy grows.

It is fanciful to think that there is one type of neoliberal growth that is bad, and another type of growth that could be inclusive, progressive, clean, etc. Growth is an integrated process, and no matter what the ideologues of growth claim, there is no proof that we can grow the economy by selectively growing the “goods” while decreasing the “bads.” Armaments, advertising, fossil fuels, planned obsolescence and waste of all kinds are integral to capitalist growth. Since its beginnings in colonial Britain, growth has been fueled by unequal exchange of labor and resources between imperial centers and internal and external peripheries. Growth requires the investment of surplus for the creation of more surplus. And this surplus is created by exploiting wage-workers and appropriating the unpaid work of women, migrant workers and nature. Shifting of costs in space and time has also been central. Access to low-cost labor and resources is vital for economic growth; if inputs become expensive, the economy slows down.

Pollin claims that growth stalled because neoliberalism prioritized the interests of the rich. The brutal cuts of structural adjustment policies and neoliberal austerity, however, were always made in the name of growth. The promise of growth bought the social peace the neoliberal project needed. Even if the real outcome was the concentration of wealth amidst anemic growth rates, this tells us something useful about the dangers of a “growth politics.”

Climate change is a political problem, meaning a problem involving competing visions of the kind of world we want to live in.

Pollin argues that we can’t afford to dream that another world is possible, not now, because climate change is urgent and “we do not have the luxury to waste time on huge global efforts fighting for unattainable goals.” We are asked to accept that the only game in town is capitalism, and that questioning capitalism and its destructive pursuit of growth is a luxurious waste of time. If not now, then when, one might wonder?

Erik Swyngedouw has warned against the depoliticizing tendency of carbon reductionism — that is, reducing all politics down to a question of their effect on carbon emissions, especially when coupled with claims of urgency. Granted, climate change is a huge problem, but it is not the only problem in whose service we should pause other aspirations. And climate change is not a stand-alone problem with a technical solution — it is symptomatic of the broader system that is producing it. Pollin’s reduction of climate change to a question of an investment fix is appealing because it makes the problem seem manageable. But climate change is not a technical problem. Climate change is a political problem, in the real sense of the word political, meaning a problem involving competing visions of the kind of world we want to live in.

Now, Pollin has a valid concern in that a degrowth agenda would involve a reduction of GDP, which has many problems — not least, rising poverty, inequality, debts, austerity, etc. We would be fools if we were oblivious to those risks. In a capitalist economy bound to grow or collapse, growth is fundamental for the stability of the system. But growth is also exploitative and self-destructive. Should we support capitalism forever, just because a collapsing capitalism is worse for workers than a capitalism that does well?

The problem with climate change is not that we are short of ideas on what is to be done. The problem is that we are not doing it.

Those of us who write about degrowth do not advocate an intentional reduction of GDP (we are the first to criticize GDP as it mixes “goods” with “bads” and doesn’t count unpaid work). Perhaps Pollin is confused because we do claim that doing the right things, ecologically and socially, will in all likelihood slow down the economy as measured by GDP. Or because we argue that certain sectors of the current economy that are central to its expansion — armament, advertising, unnecessary consumer goods, speculative financing, etc. — should contract. Given how coupled the capitalist economy is to growth, this raises the question of how, or under what conditions, we could secure human wellbeing and equality without growth. This is a huge research question, involving economic models, historical and ethnographic studies, and an assessment of potential institutional reforms, such as work-sharing, a guaranteed basic income or a maximum income tax. It is also a political agenda for the Left, to build the capacities to decouple wellbeing from growth.

Pollin claims that those of who write about degrowth do not offer a specific program to combat climate change. Speaking for myself, I do not feel I have to add more to the excellent proposals already made by Pollin himself, Naomi Klein and many, many others. The problem with climate change is not that we are short of ideas on what is to be done. The problem is that we are not doing it. What we offer from a degrowth perspective is a different diagnosis of why we are not doing it. We argue that this is because there is a fundamental clash between capitalism’s pursuit of growth and climate mitigation. Good climate policies are not adopted because of their impact on growth, and growth is outstripping the gains made from renewable energy. Our contribution is to open up the debate about alternatives to growth.

Good climate policies are not adopted because of their impact on growth, and growth is outstripping the gains made from renewable energy.

In the climate community, people have their pet ideas. Some want a carbon tax, and others want a carbon dividend (a tax returned as basic income). Some want green bonds, others a Green New Deal. It is safe to say that if we are to decarbonize the economy at the unprecedented rate required, all of these ideas will be necessary. But decarbonization is not just a matter of adding solar and wind to the energy mix — it is also a matter of taking fossil fuels out. This requires legislation and political commitment alongside struggle to stop fossil fuel projects and coal mines, and to divest from oil companies.

Pollin suggests that a 2 percent investment in clean energy and efficiency will be sufficient on its own, but there are reasons to be skeptical about such a claim. I would like Pollin to be right, but I’ve read other reputable climate scientists and engineers who are much more reserved than Pollin about the prospect of 100 percent renewables. There are the problems with the intermittency of solar and wind, and their huge storage requirements (one of the principal solutions envisaged, storage as hydroelectric energy, requires a dramatic damming of remaining rivers: an environmental nightmare). There are the emissions involved in fueling a renewable energy transition, which might be enough on their own to overshoot the remaining carbon budget. There are the rare earth minerals necessary for constructing solar panels and batteries, minerals that are scarce and extracted from areas and communities already suffering from our unquenchable hunger for raw materials. There is the question of land use and impact on landscapes. As is common in these technical debates, Pollin prefers data favorable to his argument. But he would agree, I think, that the picture is very complicated and uncertain, to say the least.

The lower the level of energy use, and the smaller the economy, the easier it is to decarbonize, and the fewer impacts that will be caused along the way.

I do not like to be a skeptic in the current political context where renewables face an uphill battle against the fossil fuel and nuclear power lobbies. I wish that a 100 percent renewable future were possible and would be as harmless as Pollin thinks. But our experience with previous technological fixes suggests we should be on the side of caution, both because of unfulfilled promises, and because there are always side effects and unforeseen costs. Even if the environmental and social costs of renewable energy are not as high as some skeptics think, they are not insignificant either — and with compound growth, even an insignificant impact quickly grows toward infinity. The lower the level of energy use, and the smaller the economy, the easier it is to decarbonize, and the fewer impacts that will be caused along the way. There is no reason for someone concerned with climate and the environment to advocate economic growth.

#### He ignores financialization

Mark Burton & Peter Somerville 19, University of Lincoln, “Degrowth: A Defence,” New Left Review, 03/01/2019, pp. 95–114

Degrowth, or a ‘green new deal’? Robert Pollin’s contribution to the recent debate on environmental strategy in these pages counterposes the two paths that currently dominate radical discussion of this issue. That they do not exhaust it is clear from the other contributors: Herman Daly, the Grand Old Man of ecological economics, reiterates his call for a ‘steady state’ economy in his interview with Benjamin Kunkel. Troy Vettese, drawing on the example of the seventeenth century’s Little Ice Age, argues for a ‘natural geo-engineering project’ to lower global temperatures through reforestation, and against mooted artificial geo-engineering solutions, which propose to manipulate the Earth’s cloud cover, alter the chemical composition of the oceans or release a ‘solar shield’ of sunlight-reflecting sulphate particles into the upper atmosphere. At the same time, Mike Davis’s discussion of the painstaking archival research by Emmanuel Le Roy Ladurie into the evidence for the Little Ice Age in France illuminates the limits of our knowledge of climate history. What follows will focus on Pollin’s trenchant criticisms of degrowth and the version of ‘green growth’ he offers as an alternative.1

Pollin’s starting point is the urgent need for emissions reduction to stabilize global temperatures, as set out by the International Panel on Climate Change. Other environmental issues—biodiversity, clean air and water, liveable cities—as well as political questions—social and international equality, for example—are subordinated to the imperative of moderating climate change. ‘There are no certainties about what will transpire if we allow the average global temperature to continue rising. But as a basis for action, we only need to understand that there is a non-trivial possibility that the continuation of life on Earth as we know it is at stake.’2 His programme calls for an extra 1.5–2 per cent of global gdp to be invested annually in a fast-growing programme of clean, non-nuclear, renewable-energy provision, while fossil-fuel industries will be shrunk by 35 per cent over the next twenty years, an annual 2.2 per cent. Taking aim at proponents of degrowth, he argues:

It is in fact absolutely imperative that some categories of economic activity should now grow massively—those associated with the production and distribution of clean energy. Concurrently, the global fossil-fuel industry needs to contract massively—that is, to ‘de-grow’ relentlessly over the next forty or fifty years until it has virtually shut down.3

This scenario is based on the ‘absolute decoupling’ of economic growth from fossil-fuel consumption—the former can expand while the latter contracts. Pollin claims this will drive down CO2 emissions ‘by 40 per cent within twenty years, while also supporting rising living standards and expanding job opportunities’. He provides costings for the social support and retraining of fossil-fuel workers: for the us as a whole this amounts to $600 million a year, or 0.2 per cent of the Federal budget. There are no costings for compensating the giant oil, gas and coal corporations; instead, Pollin notes in passing that these behemoths ‘will have to be defeated’. Although he concedes the moral case for rich countries to reduce their per capita emissions to the level of poorer ones, he considers it politically unrealistic for the us to do so. Under his programme, us emissions will fall from 16.5 to 5.8 tons per capita after twenty years, but they would still be three times the world average and three times higher than China’s per capita emissions, which would fall to 2.3 tons. To compensate, Pollin hopes the us will provide poorer countries with financial help for the transition.

Taking issue with Kunkel’s opening flourish, that ‘fidelity to gdp growth amounts to the religion of the modern world’, Pollin counters that, under financialized neoliberalism, the real religion is not growth but maximizing profits ‘in order to deliver maximum incomes and wealth for the rich’. While agreeing with the degrowth movement that much global-capitalist production is wasteful and that gdp is a flawed metric, he argues that degrowthers have not produced a viable set of policies to cut greenhouse-gas emissions enough to stabilize global temperatures. Most damningly, it would seem, Pollin charges that degrowth would create soaring levels of poverty and unemployment, while failing to arrest climate change. According to his calculations, a 10 per cent contraction of the global economy, following a degrowth agenda, would create a world-historic slump, with global unemployment rocketing and declining living standards for poor and working-class people, but would still miss ipcc targets.

Limits of decoupling

How well do these claims stand up? Pollin’s argument that the drive for profits, not gdp growth, is the real ‘religion’ of financialized neoliberalism fails to acknowledge that both neoliberalism and financialization are part of capitalism’s response to the crisis of profitability that arose following the breakdown of the post-war settlement between capital and labour. The underlying problem is not ‘neoliberalism’ but the self-expanding system of capitalism, which turns everything into a commodity (real or fictitious), and so threatens the basis for the social and physical reproduction of human society at a variety of levels. Perhaps it is this misidentification of the villain(s)—targeting neoliberalism, not the capitalist mode of production—that helps Pollin to propose what is essentially a social-democratic approach of mitigated capitalism. At the same time, there is no doubt that the imaginary of gdp growth remains a powerful ideological force in its own right, mystifying the real economic processes at stake and instead focusing debate on the idea of expansion as an inherent good. It has a significant influence on decisions regarding production, distribution and consumption, and on the financial system that facilitates each of these elements.

Pollin is partially right to argue that the degrowth movement has not prioritized the formulation of detailed policy proposals on reducing greenhouse-gas emissions; its contributions have generally concentrated on showing how gdp growth makes such reduction harder. However, there are degrowthers who have addressed this question. Kevin Anderson, certainly an ally of degrowth, has proposed a Marshall Plan to decarbonize energy supplies, as well as shifts in ‘behaviour and practices’ such as frequent flying.4 Energy and resource caps feature in the work of ecological economist Blake Alcott, for example, and the ‘cap and share’ variant of this approach has been taken up by Brian Davey and the Irish ngo, feasta.5 Again, Pollin is right to call for a specific sectoral analysis of what needs to happen to make the ‘dirty’ sectors contract and the clean sectors—the ‘replacement economy’—expand. Proponents of degrowth have never argued that some sectors should not grow, and shutting down fossil-fuel industries has been a strong strand in their work; it was, for example, the main extra-academic project of the Leipzig degrowth conference in 2014. Crucially, however, this sectoral adjustment needs to take place within an overall envelope that contracts, so that aggregate human activity remains within safe planetary limits and its ecological footprint does not exceed the available biocapacity. This is not just a matter of carbon; it involves water, air, forests, croplands and fishing grounds, as affected by the processes of production, consumption and trade.

#### His projections rely on studies by the WRI---they’re methodologically suspect

Mark Burton & Peter Somerville 19, University of Lincoln, “Degrowth: A Defence,” New Left Review, 03/01/2019, pp. 95–114

Pollin’s argument is posited on the ‘absolute decoupling’ of economic activity from fossil fuels. He rightly emphasizes that the more modest goal of ‘relative decoupling’—‘through which fossil-fuel consumption and CO2 emissions continue to increase, but at a slower rate than gdp growth’—is not a solution. He goes on to argue that it’s fine for economies to continue growing as rapidly as China and India have been doing, so long as the growth process is completely delinked from fossil fuels. However, Pollin doesn’t confront the difficulties involved in ensuring that this absolute decoupling will occur. It’s implausible that Chinese and Indian growth rates could have been so high without soaring fossil-fuel consumption—not to mention the carbon emissions caused by changed land-use and the production of concrete and steel. Pollin appeals to a World Resources Institute study which claimed to show that in a number of advanced economies, including the us, Germany and the uk, gdp growth had indeed been decoupled from CO2 emissions for the period 2000–14.6 On closer inspection, however, there are serious problems of data quality in the wri paper, including the use of different reporting protocols by different countries, missing data—emissions from international shipping and aviation are not counted in the national totals, for example—and the ‘construct validity’ of proxy measures: whether they actually measure what they purport to. The observed effects may reflect one-off or reversible changes—such as the impact of the 2008 economic crisis.7

### Green New Deal CP---AT: Renewables Subsidies

#### Renewables subsidies won’t cause big enough changes even if renewables work

Giorgos Kallis 19, ICREA professor of political ecology and ecological economics at ICTA-UAB in Barcelona, “A Green New Deal Must Not Be Tied to Economic Growth,” Truthout, 3-10-2019, https://truthout.org/articles/a-green-new-deal-must-not-be-tied-to-economic-growth/

Furthermore, Pollin provides no evidence that the scale of investment he proposes will do the job. Granted, there has been no such massive investment in the past, so it is hard to assess its potential effect. On the campaign trail, candidate Obama promised $150 billion over a period of 10 years. In 2009, the American Recovery and Reinvestment Act provided stimulus funding of $90 billion in strategic clean-energy investments and tax incentives to promote job creation and the deployment of low-carbon technologies, promising to leverage approximately $150 billion in private and other non-federal capital for clean energy investments. Fossil fuel emissions decreased 11 percent from 2007 to 2013, but this was not a result of growth in renewables (despite a tripling of wind power and a 30-fold increase in solar power during Obama’s presidency), but mostly an after-effect of the recession, high gasoline prices and to a lesser extent, a shift from coal to natural gas.

In 2009, South Korea announced a Green New Deal Job Creation Plan: $38.1 billion invested over a period of four years dedicated to environmental projects to spur slumping economic growth and create a million jobs. Korea’s emissions were 15 percent higher in 2014 than in 2008. Pollin refers to Germany as “the most successful advanced economy in developing its clean-energy economy.” German emissions in 2014 were almost unchanged since 2009. They had fallen 20 percent since 1992, and following the collapse of industry in East Germany. And even so, in per capita terms, they are 80 percent higher than the world average. If the whole world were to consume as much as the “successful” case of Germany, not only would global carbon emissions not fall, they would almost double.

Naomi Klein wrote that climate change “changes everything.” Pollin tells us that it does not have to change anything, other than 2 percent of GDP. We will keep flying, eating beef, driving cars to suburban homes, flying helicopters and jets — with the only difference being that all this will be powered by clean electricity. I won’t debate the facts and the feasibility of this vision again, so instead I’ll just point out that intuitively this doesn’t make sense to people, and it doesn’t because you don’t have to be a scientist to understand how much our current lifestyle depends on fossil fuels. Those who deny climate change know it and those who fight for climate justice know it, too. To stop climate change, we not only need to clean production, but also to reduce and transform consumption. We need free public transport, new diets, denser modes of living, affordable housing close to where the jobs are, food grown closer to where it is consumed, reduction of working time and commuting, low-energy ways of living and finding satisfaction, curbs on excessive incomes and on ostentatious consumption. It is not as though the Green New Deal is an agenda designed to fight climate change alone — it is a green Left agenda that we should pursue even if there were no climate change. And we have to pursue it independently of whether or not it is “good for the economy,” because we put people before the economy.

### Training Programs CP---2AC

#### Training programs fail---they do not address the structural causes of unemployment.

Pavlina R. Tcherneva 20, Ph.D., is an Associate Professor of Economics at Bard College, the Director of OSUN’s Economic Democracy Initiative, and a Research Scholar at the Levy Economics Institute, specializes in monetary and fiscal policy coordination and employment policy, “A Steep Price for a Broken Status Quo,” The Case for a Job Guarantee, Polity Press, 2020, pp. 31–47

First, firms do not like to hire unemployed people, and especially the long-term unemployed.10 They prefer to hire people who are already working or have smaller gaps in their work experience. For the unemployed, this is a catch-22. During the Great Recession, as we noted above, some job ads even warned: “the unemployed need not apply” (a practice that was challenged in US courts).11 Furthermore, firms are reluctant to hire long-term unemployed people because they consider nine months of unemployment to be equivalent to four years of lost work experience.12

For many, the mark of unemployment is their main obstacle to securing a good job. Firms try to avoid the “risk” of hiring and training them, which produces a modern paradox: an economy in which millions are seeking work, while firms fret over finding qualified workers. This paradox is made worse by the fact that, as the economy grows, firms tighten their hiring criteria.13 This means that those who need to find work the most – the long-term unemployed – are precisely those facing the highest barriers to entry. Not only are they hired last and fired first – and so unable to build up sufficient work experience, gain job tenure, or grow their incomes – they are also most likely to be locked out of employment opportunities altogether when employers change the rules of the game. It is another catch-22.

Training and education do not resolve this paradox, though they may shuffle people around on the unemployment line. Over the last few decades, higher education has delivered soaring student loans, but not the jobs and incomes to pay them off. Like a Sisyphean boulder, crushing student debt has meant that young people are not able to afford a home, get married, or retain enough discretionary income, putting the brakes on economic growth. Another catch-22.

Even with training programs private firms have other criteria (visible and invisible) for exclusion. Discrimination on the basis of gender, race, age, and sex are well documented. Stay-at-home parents are about half as likely to receive a second interview as unemployed parents, and only about one-third as likely as employed parents.14 African American applicants without a criminal record are called back with an offer of a job or a second interview less frequently than white applicants with a criminal record.15 People with disabilities are systematically locked out of employment opportunities and have been the last group to see their employment rates reach pre-crisis levels.16

## AT: Stimulus CPs

### Basic Income CP---2AC

#### UBI substitutes none of the benefits of an FJG.

Steven Hail 22, Economist and Lecturer, Modern Money Lab; Adjunct Associate Professor at Torrens University Australia; Author of Economics for Sustainable Prosperity, “Paying for a Green New Deal: An Introduction to Modern Monetary Theory,” Sustainability and the New Economics: Synthesising Ecological Economics and Modern Monetary Theory, edited by Stephen J. Williams and Rod Taylor, Springer International Publishing, 2022, pp. 279–302, Springer Link, doi:10.1007/978-3-030-78795-0\_14

While there is no ‘one size fits all’ job guarantee which could apply in every country, and while there would be variations in the jobs performed even in different parts of a single country, should such a scheme be introduced, the MMT job guarantee has certain essential features:

It is a permanent scheme, and not a temporary crisis measure.

It hires mostly those with less education and skills, at a wage that allows for full participation in society.

It is available to all, compulsory for none, and allows the otherwise unemployed to remain and work in their local communities.

It is scalable – growing and shrinking counter-cyclically.

It stabilises the economy across the economic cycle, acting as an inflation anchor.

The appropriate level of the fiscal deficit to bring about non-inflationary full employment is determined by the number of people who walk into a job guarantee office and take up a place in the program.

It is an essential feature of any policy program aimed at combining social justice with ecological sustainability (Forstater 2003).

For all these reasons, a job guarantee is to be preferred to a stand-alone universal basic income (UBI). A UBI would have to be set at a level not sufficient to eliminate poverty; would require changes to the tax system which would be unlikely to meet with public support; or would be inflationary, due to the scale of transfer spending involved. Moreover, it would not guarantee everyone the opportunity of paid employment, and crucially has no counter-cyclical stabilising properties. A job guarantee is a core part of MMT: to ignore it is to support the only other alternative, which is the current ‘buffer stock’ of the involuntarily unemployed (Mitchell 1998). This is economically inefficient and morally bankrupt. There should be no surprise that all leading MMT economists advocate for a universal and permanent job guarantee. It is as much a part of MMT as the non-accelerating inflation rate of unemployment (NAIRU) is a part of modern neoclassical macroeconomics.

#### The job guarantee is an ideologically transformative policy that challenges hegemonic growth. Unlike UBI, it repoliticizes work, which is vital for its revolutionary potential.

Brandon J. Unti 20, Economics Instructor, Bellevue College, “Money, Work, and Mass Extinction: Transformational Degrowth and the Job Guarantee,” University of Missouri - Kansas City, 2020, ProQuest

Effective demand, modern money theory, and the job guarantee may appear as weak medicine for the project of degrowth. Yet, this is not a cynical argument. Although Keynes had different goals than Marx, The General Theory also reminds us of our agency. If government is accountable to people and not to money, then poverty amidst plenty is not merely a paradox, it is unacceptable. Neoliberals rightly recognized the peril of Keynes’s argument. “A somewhat comprehensive socialization of investment,” is at least the thin end of a wedge. The scope and ferocity of their reaction against Keynes indicates their fear.

Whatever the origins of MMT and the JG, they contain revolutionary possibilities. The more I think about and teach these ideas, the more I see this potential. When I was introduced to MMT, I was immediately impressed. The argument was simple, provocative and powerful; a refreshing departure from the scholastic sterility of so much twentieth-century macroeconomics. The job guarantee was less profound, but provided a bold solution to a real problem. Overtime, however my enthusiasm for the whole project of full employment dwindled.

The more I studied capitalism, the more radical I became. If MMT was merely an argument against austerity, and the JG merely an employment policy, then what was the point? Even setting aside the environment, capitalism is an indefensible form of social madness. The system requires that we ceaselessly consume things we do not need, in order to keep working jobs we do not want. Meanwhile, actual needs go unmet on a massive scale. So, why prop-up or perpetuate this system? Once ecological crisis is added to the equation, there is no argument for palliatives of employment and growth.

Such was my thinking as I neared the end of my course-work. One response was to reject the goal of full employment altogether. An alternative was a radical reconsideration of MMT and the JG. I opted for the latter and it became the basis for my dissertation proposal. I admit I set about this task somewhat reluctantly. By then, I was a committed anti-capitalist and my focus for the past year had been Marx, alienation, and degrowth. A radical take on MMT and the JG sounded like a dissertation topic, but it was not clear what that actually meant, or if it made any sense.

Perhaps I was attempting to square the circle. Before me was a list of contradictions: the environment and the economy; degrowth and full employment; wage-slavery and a jobs policy; revolution and reform. Wrestling with these contradictions, I came to see that Marx and Keynes were as much theoretical allies as ideological enemies.

Both thinkers place money and work at the center of their analysis. Both are astute observers and sharp critics of the paradoxes M – C – M’. Perhaps most surprisingly, Marx and Keynes make the same over-arching point. What appear to us as immutable, external forces dictating economic life, are in fact arbitrary social institutions. Socially and politically then we have the capacity to control and change the economy.

On the issue of work, Keynes emphasizes quantity and Marx quality, but they are not at odds. Involuntary unemployment is paradoxical, socially destructive, and entirely avoidable. For Keynes poverty amidst plenty, and unemployment, are socially instituted and can be socially eliminated. Exploitation and alienation present a more damning indictment of work. Marx’s goal is different, but his point is the same. The organization of production is a matter of social choice. Wage labor is no more a necessity than slave labor.

Marx and Keynes are most closely allied in identifying money as the symbolic representative of transcendent authority that robs people of their sense of agency. For Keynes the existence of money, with its peculiar role and properties, is the cause of involuntary unemployment. For Marx, money is the fetish par excellence; a new monotheism for the rising religion of capital. Under the reign of money, society’s resources and especially human lives are sacrificial means to an external end.

MMT and the JG embody the money-work-agency nexus between Marx and Keynes. And they are equally suited to serve Marx’s radicalism as Keynes’s reformism. In some respects, the fact that these labels lack the baggage of Marx, makes them more effective rhetorically, politically, and ideologically. I teach Marx and I teach MMT. Unfortunately, even young students are suspicious of anything “Marx.” On the other hand, MMT is an astonishingly powerful tool of critical pedagogy. I would not even attempt to teach commodity fetishism. But after one week of MMT, students understand the core of it. Money is a social relationship not a thing. People control it, not the other way around. People produce the economy.

MMT and the JG strike at the core of capitalism, alienation, ideology and fetishism. MMT overthrows capital’s strongest line of defense. It takes down the thing-in-itself and disrobes the ultimate scapegoat of injustice. If money is something we make and control, then it can no longer serve as a wall between desperate needs and ready resources. The message is way bigger than jobs or austerity. If people recognize that money is not an external authority, they will demand that the extra food laying around go to feed starving people.

The JG is an equally provocative teaching tool. Even as a thought experiment, it politicizes the economy. Suddenly, it is up to society to decide what work is, how it should be valued, and what we want to produce. In this context, students can really begin to rethink work. What is it we are trying to accomplish? What kinds of things is it important for people to do? What kind of “jobs” do we want? The economy produces people: our lives, our neighbors, our world.

In practice, a JG could be even more radical. Here, I will betray the extent of my naïve, idealism. Given an opportunity, I believe people would exchange income and consumption, for time, meaning, and connection. The actual politicization of work that a JG would entail is the kind of catalyst urgently needed for a real transformation of the economy. The real goal is not full employment, but a radical recollection of human agency. It is a way to let Mill’s question in, and it is a way out of the capitalist mode of mass extinction. It is a way to understand that people produce the economy and the economy produces people.

### Basic Income CP---AT: K of Work

#### Work must be reclaimed as part of a post-growth project of meaning-making. This can only be done by a job guarantee, NOT a basic income.

Brandon J. Unti 20, Economics Instructor, Bellevue College, “Money, Work, and Mass Extinction: Transformational Degrowth and the Job Guarantee,” University of Missouri - Kansas City, 2020, ProQuest

V. Recalling the Future

Before they can get to work producing a world fit for humans, people need to be able to imagine a such a place. The trick is how to start. Our imaginary is a product of our day-to-day social activity and existence. In the increasingly commodified world of BS, we perform the work of dispossessing ourselves of our own agency. Every day, we push that agency further from ourselves and deeper into money’s alien pockets. People need a way out. We need an escape hatch.

The good news is that humans are still around despite the market, and so is a world fit for them. The human world of abundance never actually went away. Indeed, most of us secretly steal moments of our human lives back from beyond the commodity frontier (Conde and Walters 2015). We are humans with our friends and family. The problem is that the human world is increasingly privatized, surveilled, enclosed, and hidden from view. It is there but behind imaginary walls. At behest of money, we build these walls and rebuild them daily; making the world scarce.

Breaking out of money’s rule is no small feat. How do we change our minds when our minds are the products of our lives? How do we change our lives when our lives are the products of the world? The degrowth movement is an invitation for humans to help one another unlearn markets, money, scarcity and toil through dreaming up alternative worlds (Saundberg 2014). The environmental justice movement is a reminder that we do not have to start from scratch (Singh 2019). Memories of the future exist in the present (Todd 2016).

B.I.G.

Stupidly small steps can make a big difference in addressing the imaginary crisis of mass extinction. A basic income guarantee (BIG) is proposed as a way out of the market by many who recognize mass extinction is fundamentally a crisis of capitalism and human meaning.111 Honest proponents of a BIG, present it as an escape hatch out commodified and dehumanizing market dependence. In this case, a BIG expands the zone of unconditional access to life that is nascent in welfare-state policies like universal health care and free education.112 If capitalist managers no longer stand between people and money, people are free to pursue their own conscious productive activity (i.e. human activity). Essentially, a BIG liberates work from money.

But for some, the idea of freeing work from money is the wrong way to think about a BIG. So long as the meaning of “work” remains mired in the puritanical frame of self-sacrifice, then work itself is the thing we are trying to eliminate not liberate. “Work” understood as onerous drudgery is the bogeyman. Viewed from this perspective, the point of a BIG is rather to “detach livelihood from work” (Graeber 2018, 279). Livelihood (income) is the thing we are trying to set free; that is, liberating income from work. However, this cedes to much conceptual territory to the puritanical ideology of work that serves the neoliberal project. Neoliberalism wants us to view work (human activity) as suffering. Framing the BIG in this way implicitly accepts the premises of the neoliberal project.

Ideology Work

The idea that work is a bad thing, follows directly from the foundational assumptions of neoclassical economic theory. These assumptions themselves set up the argument that the impersonal market is the solution to every problem. Neoclassical economics is one big “ontological gambit” that asserts market efficiency as the meta-value of human existence. By way of aggressively abstruse maths and the weaponization boredom, neoclassical economists claim a special scientific status. They are authorities on the optimal organization of human society.113 But the entire enterprise rests on the very shaky frame of the homo oeconomicus.

The neoclassical model starts with this asocial individual as the representative human. They have a given set of preferences and a given endowment of resources. By nature, humans are assumed to be rational, self-interested, utility-maximizers. The world is scarce because individuals are assumed to be insatiably greedy consumers. As rational beings, humans are inherently averse to productive activity. Work is irksome and yields disutility. Humans will therefore only work if the utility of the wage exceeds the disutility of work. The only way to coax a human out of their naturally lazy stupor, is by offering them something like a monetary reward… Skipping ahead a few steps, it follows that the optimal way to allocate resources is through the free market. Price signals will only work efficiently when the whole world is in the market.

The economists’ depiction of human nature is obviously flawed and so is the model that flows from it. Nonetheless, it has very successfully colonized our collective imaginary. Starting with “inadequacy of means” as “the first principle” it not surprising we find scarcity in the world (Sahlins 1972, 3). But scarcity is socially instituted in the same way that needs are social products (Matthei 1984). Paleolithic societies lived in a world of abundance because they never imposed “obsessions of scarcity.” Similarly, homoeconomicus’s aversion to work is deeply embedded in our imaginary. “Many a discussion proceeds on this axiom that, so far as regards economic matters, men desire above all things to get the goods produced by labor and to avoid the labor by which the goods are produced” (Veblen 1899). This explains the confusing despair that attends the supposedly ideal situation of being paid to do nothing. “Just as a prisoner in solitary confinement inevitably begins to experience brain damage, the worker deprived of any sense of purpose often experiences mental and physical atrophy” (Graeber 2018, 122).

The point here is these are the shoddy foundations of the model neoliberalism aims to establish. The model is clearly wrong. But apparently when the model does not fit reality there are two ways to proceed: (1) scrap the model and start over, (2) smash the world into the model. The commodification of everything is an attempt to carry out option (2). The result of this effort is mass extinction. For this reason, we should not cede the ideological terrain of human nature and its attendant concept of work to neoliberalism. Instead we should scrap neoclassical theory and its sociopathic foundations. One way to do this is by reclaiming work (Singh 2019).

Starting from the opposite view, what makes us human is our free, conscious, social, productive activity. Work, in other words, is what makes us human. Work is human activity. Remembering this is a necessary part of turning our mode of production right-side-in. I say “remember” because those Paleolithic humans who never discovered scarcity also never discovered poverty and did not distinguish work from play (Sahlins 1972). BIG understood as the liberation of work from money is an important step, but it does not go far enough.

A BIG is an escape hatch. It rescues those trapped in BS jobs from economically coerced nonexistence. A BIG itself increases an extra person’s value from negative to zero. The message is: “Fine. You can be here. You are not in the way. You are no longer worth less than nothing.” “Nothing” is better than worthless, but it is still not much. Simply surviving does not make you human.

Honest proponents of a BIG do not actually believe humans are averse to work. Rather they believe that people liberated from meaningless wage-slavery will use their freedom to pursue real human activity (S. Alexander 2015). People will spend time with friends and family. People will build better more meaningful relationships. They will pursue their passion and curiosity. They will enjoy their lives. They will make music and art. They will volunteer. They will organize politically. And they will have more time to care for one another and the world. Simply, reducing the total amount of time and energy consumed by in the incessant pace of capitalist production will no doubt take pressure off the biosphere (Graeber 2018). This is the hope of BIG proponents and a kind of ideal scenario. But would it really work?

Maybe, and we should definitely try. However, this scenario might be too optimistic. It is, as Keynes’s prediction illustrates, possible to underestimate just how far we have come in forgetting how to be human. Centuries of capitalist production have forced money value deep into our consciousness. Today, many people are so disconnected from themselves, one another, and the world they may need more than a way out. They might need some help remembering how to be human. Some people have been denied access to care for so long they might not remember how.

People who have really been unplugged, are lost. They are lost to the world. They are lost to themselves. They are alone. They do not fit anywhere. They do not belong and do not know how. These people need help. And we all might need more help than we recognize. A BIG can and should be more than sufficient for a person’s every physiological need. But what humans really need is meaning not money.

Meaning Work

Mass extinction is a crisis of meaning. The crisis of meaning can be understood by thinking of mass extinction as a problem of population. People have become extra in relation to the world. The world is scarce because we produce extra people and “extra” implies too many. This is exactly how and why mass extinction is a problem of meaning. We are not anthropocentric enough.

Viewed anthropocentrically, the population crisis is the other way around. The problem is that there are not enough humans. We have created a world where money monopolizes meaning and value, and in terms of money, people are extra. In this world, humans are unnecessary. They are denied access to meaning and value because they are not needed.

If people are not needed and not valued, they cannot be human. A world fit for humans is one where humans are able to mean and have value. Shared meaning and value define the social world. For a person to belong to a social world, they must have a role in shared meaning and value. A person is valued when others care about them. A person finds meaning through caring for others and the world. To become human and have meaning a person must care. To care is to mean. To mean is to be needed. And above all people need to be needed.

A BIG is a way out of the crisis of meaning, but just a way out. It removes the obstacle of money that stands between people and themselves as humans. But a BIG does not offer a way forward. If someone has never been out of their cage and you open the door, they might not feel liberated. They might just be confused. The real problem for most people who are in despair is meaninglessness. A person in despair needs not only to not be cut-off from meaning. They need a way to meaning. A BIG opens the door. A way forward is something like a job guarantee JG.

The real value of a JG is in terms of meaning not money. If a BIG promotes a person from a negative value to zero, a JG offers a way to positive value. A JG becomes a revolutionary possibility to the extent that it goes to work on the meaning and value of work. By reminding people of their collective agency in defining meaning and value, it offers a way out of the colonized imaginary of mass extinction.

Make-Work

A JG should be a policy of “make-work.” It should set out to make work meaningful. It should reclaim the meaning of work. The meaning of work under capitalism is hostage to money value. For money, work is drudgery. It is what people have to do to in the market to survive. Work is puritanical sacrifice. It causes disutility. Work is the opposite of play, an onerous means to soulless existence. Satisfaction is out there in things, commodities. Having, owning, and excluding are sources of utility according to money. Pleasure becomes a function of scarcity. The opportunity cost money is human life. Human existence (time) is exchanged for money. Extra people’s activity/existence is endured as a sacrifice to money and things. Thinking this way is how we come to see our lives as a means to an end that is forever deferred. This concept of work is just one piece of the bigger ideology that makes the world scarce and people extra; the antihuman ideology of the capitalist mode of mass extinction.

But this one piece is terribly important because work is our day-to-day existence. Its meaning defines the possible ways we can fit into the collective human project of creating ourselves and the world. As the center of our social existence, work plays the essential role in shaping our social consciousness. In order, to imagine a way out of capitalism we have to start by acting our way out. BIG opens the door. A JG is a place to go. A BIG means you are not in the way. A JG means you belong.

A JG will help us reclaim human existence and create an anthropocentric economy to the extent that we recognize this potential. A JG is not and should not be viewed as a part of a Green New Deal. The New Deal of the 1930s was a way to save capitalism.114 The goal of an anthropocentric economy is the opposite. It is to save humans and the world from capitalism. An anthropocentric JG is not about a quantitative increase of output and employment. It is about a qualitative transformation work and the economy. The Great Depression involved a failure to “account for the level of employment.” Now we must “account for the content of employment” (Robinson 1972, 6). This might sound like a lot to ask of a reformist, Keynesian, employment policy, but if you think about it, the whole premise fits in a historical materialist framework.

Revolutionary Work

Marx identifies the perversity of capitalism in production. The labor theory of value exposes how humans are means of producing wealth and not the other way around. The core of Marx’s critique of focuses on the labor process and what it does to humans. In the commodified world of monetary production, human activity is set against itself. Social relations start to appear as the relations between things. Workers become alienated from themselves, each other, and the world. The critique of the capitalist mode of production is a critique of the labor process. It is a call for workers of the world to reclaim work.

A JG can go to work on our daily activity, redefining it and revaluing it. Our mode of production is inside out. To turn it right-side-in we need to remind ourselves what we are doing. We produce and reproduce ourselves and our world. Work is the activity of social reproduction should be valued in relation to this goal. What counts as productive when we think of work this way is care. Caring for each other and the world is how we create meaningful lives for ourselves and a world fit for humans.115

Care is a human activity defined by its humanness. Care is the conscious direction of human energy toward the production of humans and their world. The activity of care resists markets, money, and measurement. Care’s value is strictly a qualitative matter of life-giving and cannot be quantified, reproduced, or even counted by a machine. Care cannot be automated. Care is why we still have humans and a world. Care is the way humans resist impersonal market forces. Care is anti-capitalist struggle.

Care cannot be assigned a money value. But that does not mean it should not be recognized, encouraged, promoted, and rewarded. The real reward for care is meaning. Humans who provide care matter. They are needed because what they do matters. People realize human meaning through being needed by other humans and the world. Capitalism is antihuman because it is anti-care. When people work for money, care and compensation move in opposite directions. As Graeber puts it, “there seems a rule general that, the more obviously one’s work benefits other people, the less one is likely to be paid for it” (2013). The other side of the coin is that the more harm one does the more one is likely to get paid.116

The way we can recognize and reward care, then, is through a meaning guarantee. A BIG liberates work from money. A meaning guarantee is a promise that anyone who is willing and able to care, will be provided a way to care. Universal access to care is a universal right to be human. This reverses the capitalist logic of bullshitization. The surge of the BS sector is the latest way to soak up the growing surplus population of extra people created by fetishized human productivity turned against humans. BS jobs pay people to not be human. A meaning guarantee offers a way to be human. The reward is meaning in place of despair.

Human Work

A JG is a BIG plus a meaning guarantee. People are given an income and offered a way to mean. Some people only need to be set free from capitalist production. They already care and no how to mean. But some others need help. The JG accompanies the BIG by guaranteeing people a role in the social project of mutually creating ourselves and the world. This means beyond redefining work a JG should be “make work” in another sense. To transition from a world where most people are extra, to one where everyone is human, we need to make—that is imagine and create—lots of new ways for people to care for one another and the world.

An anthropocentric mode of production is organized in the interest of humankind. If our collective project is human flourishing, then people should be “paid” not only to care one another and the world, but also themselves. If we want a rich healthy world filled with lots of happy healthy friends and neighbors, then we should pay people to be healthy, to socialize, to pursue their passions, to go to school, to make friends, to exercise, to visit the doctor, to talk to a therapist, to sleep-in, to eat healthy food. People need to play. We should pay them to.

Play is work in an anthropocentric economy because play produces humanness. We need to come up with lots of new ways for people to be human. We should pay people to think of more and better ways for people to play and communicate and connect. Caring for ourselves is caring for one another. Caring for one another is caring for the world. Caring for the world is how we belong. This is the work of being human.

### Basic Income CP---Fails

#### The primary benefits of an FJG stem from provisioning publicly useful tasks.

Mark Paul et al. 18, Mark Paul is a postdoctoral associate at the Samuel DuBois Cook Center on Social Equity at Duke University; William Darity Jr. is Samuel DuBois Cook Professor of Public Policy, African and African American Studies, and Economics, and director of the Samuel DuBois Cook Center on Social Equity at Duke University; Darrick Hamilton is associate professor of economics and urban policy at the Milano School of International Affairs, Management and Urban Policy and Department of Economics, New School for Social Research, and director of the doctoral program in public and urban policy at the New School; Khaing Zaw is a research associate at the Samuel DuBois Cook Center on Social Equity at Duke University, “A Path to Ending Poverty by Way of Ending Unemployment: A Federal Job Guarantee,” RSF: The Russell Sage Foundation Journal of the Social Sciences, vol. 4, no. 3, Russell Sage Foundation, 2018, pp. 44–63

Why Not Just Adopt a Basic Income Guarantee?

The universal basic income proposal has gained followers across the political spectrum as a viable path to fight increasing deprivation; it also is a non-incremental, bold policy that merits comparison with the FJG. The FJG and the UBI are not necessarily mutually exclusive. In the end, it depends on the structure of the specific policies proposed: is UBI posited as a substitute or complement to the FJG?

Although we oppose the idea of substituting a UBI for a FJG, we believe some form of a UBI, such as a negative income tax, could be beneficial if coupled with the FJG, to ensure an adequate standard of living for all.

We argue in favor of FJG over the UBI on the following grounds:

the FJG provides the dignity of nonpoverty employment for all who seek it;

the FJG enables the nation to fulfill a host of socially useful tasks that are not currently provided, or are underprovided, by the public sector;

the FJG carries a lower inflation risk than the UBI;

the FJG contributes directly to macroeconomic stabilization; and,

perhaps surprisingly, the FJG will cost considerably less.

Advocates of the UBI have been critical of the FJG proposal (Van Parijs 1995; Standing 2002; Standing 2013). To justify a UBI, Standing fundamentally questions the ability of a market society to provide jobs for all, claiming that market societies rely on restricted job openings to discipline the poor; however, with the presence of a FJG, full employment is achieved. Standing’s objection rests on a philosophical opposition to the nature of work in modern society. From his perspective, the requirement to work is fundamentally punitive and unjust. Additionally, Guy Standing claims that the FJG would condemn the poor to have to work. On the contrary, the work that we envision via a FJG provides the dignity of contributing to social welfare in a social setting, which in turn is associated with economic, physical, and mental well-being (Goldsmith, Veum, and Darity 1997; Darity 2003).

Workers employed under the FJG would enable the nation to fulfill a host of socially useful tasks either not provided or inadequately provided by the private sector, including those outlined. Today, we still observe the enduring benefits of projects constructed under the WPA and CCC—the FJG will ensure that similar projects are constructed, providing economic, social, and environmental benefits for generations to come.

Unlike the UBI, the FJG generates productive activity via the public provision of goods and services, lowering the inflationary pressures associated with the allocation of similar levels of income through a UBI. The FJG may have some inflationary pressure, but Pavlina Tcherneva has expressed concern that the magnitude of a UBI might even lead to hyperinflation. Inflation would dampen the real effects of a UBI program. This problem would be exacerbated if workers receiving the UBI exited the workforce altogether and reduced output via voluntary unemployment (Tcherneva 2013).

A substantial benefit of the FJG is that it functions as a strong automatic stabilizer in the economy, expanding during economic downturns, and contracting during economic booms when the private sector’s demand for labor increases and workers migrate from the FJG program into the private sector. This mechanism provides substantial macroeconomic stabilizing effects on the economy—potentially reducing the magnitude and frequency of economic downturns. Regarding the UBI, no countercyclical measures are built into the model—allowing financial markets and businesses cycles to continue causing unnecessary economic hardship and job loss for Americans (Goldsmith, Veum, and Darity 1997; Darity 2003).

### Basic Income CP---Costs

#### UBI is multiples more expensive than a FJG.

Mark Paul et al. 18, Mark Paul is a postdoctoral associate at the Samuel DuBois Cook Center on Social Equity at Duke University; William Darity Jr. is Samuel DuBois Cook Professor of Public Policy, African and African American Studies, and Economics, and director of the Samuel DuBois Cook Center on Social Equity at Duke University; Darrick Hamilton is associate professor of economics and urban policy at the Milano School of International Affairs, Management and Urban Policy and Department of Economics, New School for Social Research, and director of the doctoral program in public and urban policy at the New School; Khaing Zaw is a research associate at the Samuel DuBois Cook Center on Social Equity at Duke University, “A Path to Ending Poverty by Way of Ending Unemployment: A Federal Job Guarantee,” RSF: The Russell Sage Foundation Journal of the Social Sciences, vol. 4, no. 3, Russell Sage Foundation, 2018, pp. 44–63

To compare the costs of the two programs, we need to identify the level and ways a UBI could be funded, because levels of generosity could vary greatly. Reviewing work from various UBI advocates, we see that the following three features hold throughout: the policy is universal, the UBI is distributed to individuals, and the UBI is set at a level to support a basic living standard, with a goal of poverty elimination (see Van Parijs, 1995; Standing 2002; Standing 2013).

Estimates for the UBI vary, but Charles Clark estimates the UBI would have cost roughly $1.98 trillion in 1999, equivalent to $2.86 trillion in 2016 dollars (2003, 150). Harvey also calculated the total cost of a UBI, finding at the time of his study that it would cost $2.23 trillion, equivalent to $2.98 trillion in 2016 dollars (2005). Both of these calculations are based on a payout of approximately $12,500 per person per year. These are annual cost estimates—estimates that represent a cost more than double that of the FJG during the most severe recession [End Page 56] in almost a century (see table 1), and more than four times our estimates under current economic conditions with a modest uptake assumption.26

These estimates showing that the FJG costs are much less than the UBI do not account for the returns to investments that would take place under the FJG—resulting in substantial GDP, employment, and productivity growth. Finally, the costs associated with UBI will not ebb and flow with the business cycle, hence it lacks economic stabilization properties. For these reasons, we strongly support a FJG when UBI it is posited as a substitute, though we recognize that the two can function as complements.27

### Corporate Stimulus CP---2AC

#### Corporate stimulus relies on the trickle-down myth---it doesn’t solve employment and exacerbates, NOT reduces, inequality.

Pavlina R. Tcherneva 20, Ph.D., is an Associate Professor of Economics at Bard College, the Director of OSUN’s Economic Democracy Initiative, and a Research Scholar at the Levy Economics Institute, specializes in monetary and fiscal policy coordination and employment policy, “A Steep Price for a Broken Status Quo,” The Case for a Job Guarantee, Polity Press, 2020, pp. 31–47

Fiscal policy hasn’t done a good job of tackling unemployment either, even though it has more tools at its disposal. It was demoted in the post-Reagan era and paired with deregulation, wage suppression, and trickle-down policies that masqueraded as sound economic policy. The result was the greatest transfer of wealth to the top and the slowest payroll employment recovery rates in the postwar era. But the earlier postwar “Keynesian” fiscal policies did not do the trick either. Government stimulus policies failed to generate the conditions that would ensure a job for every jobseeker. Traditional fiscal pump priming typically prioritizes stabilizing investment over stabilizing employment (the latter being regarded merely as a byproduct of the former). This is done via loan guarantees or contracts with guaranteed profits, subsidies, and bailouts. Indeed, fiscal policies often help stabilize and increase corporate profits in the midst of a recession, whereas jobless recoveries have become the norm. By contrast, the Job Guarantee is a straightforward response: the policy solution to someone unable to find paid work is to provide them with an employment opportunity.

## AT: States CP

### States CP---2AC

#### Perm do both---degrowth JG can be federally financed, locally implemented.

Brandon J. Unti 20, Economics Instructor, Bellevue College, “Money, Work, and Mass Extinction: Transformational Degrowth and the Job Guarantee,” University of Missouri - Kansas City, 2020, ProQuest

For this model to succeed in gaining and retaining popular support, the administration of the JG should be highly de-centralized. The role of the state is first and foremost to finance the program. Additionally, government should establish guidelines concerning environmental caps/regulations, working conditions, and see to it that locally administered programs adhere to those guidelines (i.e. enforcing the reduced work week, maintaining the wage and benefits package, and encouraging low-throughput employment and methods of production).

Administration of the JG should otherwise be undertaken at a community level,37 [FOOTNOTE 37 BEGINS] 37 “Proponents argue that a JG should be financed by a national government that spends in its own currency under flexible exchange rates, since such a government can always afford to provide an inelastic demand for labor at a base wage. This does not mean, however, that the program should be necessarily run by a federal government; indeed, jobs programs in India and Argentina have been quite decentralized in their operations. Further, jobs do not necessarily have to be provided by the government sector; for instance the non-profit sector will generally have intimate knowledge regarding community needs while often being short of available workers (or funds to hire workers) to meet these needs” (Fullwiler 2012, 1; Tcherneva 2012). [FOOTNOTE 37 ENDS] and involve a high degree of social deliberation with community members democratically determining what kinds of employment will meet the needs of the community, provide meaningful work, minimize throughput, and maintain the health of local ecosystems. Management of project proposals, monitoring of work, and the keeping of records should also be carried out at a local level. This will involve significant amounts of labor providing employment to those who wish to serve administrative functions. Overall the aim of the DGJG is to tap the strengths of both centralized TD policy and grass-roots BU approaches. In this case, the key strengths of the central government are: (1) the ability to finance the JG (2) the ability to universally ensure access to employment and economic security, (3) the ability to initiate economy-wide policy and (4) to encourage rapid institutional change.

Regarding affordability, JG proponents have argued for the feasibility of a JG via cost estimates—taking note of the estimated wage bill as well as cost savings associated with reduced spending on unemployment insurance, welfare, crime, public health and other costs linked to involuntary unemployment. These estimates show that traditional calls for a JG are quite feasible given existing budgets in nations like the US. Several estimates of the cost of a traditional JG proposal put total expenses at less than 1 percent of GDP for the US (Wray 1998). Perhaps more importantly, JG proponents frequently ground the policy in an understanding of modern money theory (MMT), which details why a sovereign currency issuing nation with a flexible exchange rate, can always afford a JG (Wray 1998, 2012).

#### States can’t do an MMT---they are not monetary sovereigns.

David Barrows 21, has extensive global experience in public administration, education and training, business-government relations, and economic analysis, was a senior executive in the government of the Province of Ontario with responsibility for industrial and trade policy, retired as the Associate Director of the MPA program at the Schulich School of Business, York University, and is currently Capital Region Director of the Aurora Philosophy Institute (API), has consulted for the Commonwealth of Nations, the OECD and the World Bank, “The National Debt is Irrelevant: Some Unsettling Questions Regarding Government Budget Deficits,” Aurora Philosophy Institute, API Research Paper #21-06

5.3. MMT

Lerner appears to have had no students to continue his work. There is no ‘Lerner school’. Lerner never stayed at any one institution for long. He served on the faculties of nearly a dozen universities and accepted over twenty visiting appointments. Nonetheless, today’s MMT is to some degree a revival of Lerner’s ideas.

Lerner's concept of FF did not receive recognition and acceptance in the mainstream economic literature, although some version of ‘Keynesianism’ did seem to prevail in the 1950s and 1960s. The 1960s Kennedy tax cuts reinforced the issue of insufficient aggregate demand. However, the current system continues to permit economic and financial crises leading to large deficits with which the mainstream of the economics profession has difficulties. This has led to a revival of FF rebranded as MMT.

Historically, money was a reward for value creation. Today, money is used to create value. Consistent with Lerner, MMT argues that a county's currency is a public monopoly for the government. Unemployment is evidence that a currency monopolist restricts the supply of the financial assets needed to pay taxes and satisfy desired savings.

Smithin (2021, i) argues that:

The core argument of MMT rests on the logically unassailable proposition that the central government of an economy with its sovereign currency and a floating exchange rate (to which I would also add a 'fixed but adjustable' exchange rate) faces no binding financial constraints. Under these circumstances, fears about 'unsustainable' budget deficits are nonsense. However, none of this applies to jurisdictions with an irrevocably fixed exchange rate or those embedded in a currency union. Nor does it apply to the individual Provinces or States in a federal system. And by no means does this purely financial insight settle any of the debates about macroeconomic policy alternatives, which must still be debated on the merits of the policies themselves. Critically, the core proposition does not settle debates about the correct level of interest rates or about whether to define interest rates in 'real' or 'nominal' terms.

Since leaving the gold standard, money has essentially been backed by faith in the issuing government. No longer fearing the shortage of gold, governments are free to print the money needed to assure full employment and pay for resources to do important things like deal with climate change. MMT views currency as a public good rather than a medium of exchange. As a consequence, taxes do not finance spending. Taxes render the money of account chosen by the state as being acceptable for payments. This is consistent with Lerner's concept of FF. The first financial responsibility of the government is to keep the total rate of spending in the country on goods and services neither greater nor less than the rate which at the current prices would buy all the goods possible.

MMT recommends a ‘job guarantee’ program as a critical component of its policy package. However, as Barrows (2007) has demonstrated, since the Great Depression of the 1930s no developed economy in the world has utilized a nationwide government program as an ‘employer of last resort’. Governments in many transitional economies, however, are reluctantly ‘forced’ to provide job guarantees to university graduates. At the same time MMT appears disinterested in the composition of public expenditures. In my view, this concept is unviable as public policy. No politician can be elected on a campaign of ‘digging holes’. Keynes was concerned with public policy implementation. In the General Theory digging holes was not a policy recommendation, it was an exercise in hyperbole (which worked well).

#### That’s offense---delegation of services causes reactionary fiscal policy, climate crisis, and existential populism.

L. Randall Wray 20, Professor of Economics at the Bard College, Annandale‐on‐Hudson, “Sovereign Currency and Non‐Sovereign Budgets: The Modern Money Theory Approach,” Public Budgeting & Finance, 08/31/2020, p. pbaf.12251

The rise of “federalism” shifted responsibilities to state and local levels (devolution) while slower growth of federal spending reduced funding available to states for clean water, sewage treatment, garbage, local transit, and public housing. States had to follow suit, devolving much of the costs of such services to local government. As governments raised sales and property taxes to increase revenues, this generated tax revolts. Competition among governments to attract jobs created tax breaks for corporations requiring higher taxes on households to make up for the lost revenue (Johnston 2007). The rise of online shopping compounded difficulties as brick and mortar retailers closed and cities lost jobs and tax revenues. Cities slashed services and jobs to cut costs, which together with high taxes helped to fuel the exodus to suburbs— which generally had newer infrastructure and better services—leaving cities destitute.

This played into the hands of BBC philosophy as taxpayers, not citizens, became the basis of government. Suburbanite “stakeholders” pay taxes to fund local government, encouraging the notion that individual taxpayers should get back from government what each pays in taxes. Welfare is seen as a form of theft because recipients receive more from government than they pay. “Money's worth” calculations come to dominate assessments of the viability of the New Deal's most important programs—above all, Social Security. Federal budget deficits were increasingly attributed to “entitlements” going to the undeserving. Generational accounting threatens social programs by proclaiming impossibly large unfunded commitments.

As PS admit, many of the arguments behind federalism sound good: cutting federal bureaucracy, returning power to states, supporting grassroots democracy, and strengthening community. But the reality is ugly: budget constraints are much stricter at the state and local government levels, as discussed above. And since state and local governments are severely restricted in their ability to “net spend” (run deficits), devolution would only work if the federal government provided net revenue (its own deficits) as an injection to state and local economies. However, the rise of BBC and the focus on federal budget deficit reduction (at least as a goal, if not in practice) meant that it was not possible to provide federal funding. Hostility to taxes and “big government” made trickle‐down supply‐side tax cuts the only palatable policy. The rich got their tax cuts, but only inequality trickled down.

Shifting responsibility to state and local levels—combined with federal supply‐side tax cuts— increased the overall regressivity of the tax system since state and local tax systems are strongly regressive. Slower growth and secular stagnation bring out the worst in local governments and in taxpayers: governments cannot afford services, and households do not want more taxes—so bond proposals (schools, infrastructure) are voted down. Public officials play triage, choosing which groups to serve and which to ignore. BBC‐ers promote group conflict: fighting among taxpayers and between cities plays into the hands of corporations by increasing their political leverage and promoting hostility toward government as the well‐funded push of market ideology promotes the “there is no alternative” (TINA) view. The political fallout includes racism, sexism, white collar versus blue collar, city versus suburb, and ethnic group against ethnic group. As PS put it, federalism makes it difficult to get a majority behind any useful policy, with 80,000 units of government to split up voters among a myriad of class, race, ethnic, and religious lines.

A vicious cycle of Federal tax cuts for the rich increases the Federal deficit and fuels demands that “pay‐fors” must be identified before any new spending bills can be considered. Devolution shifts more responsibility to state and local government, with less money provided fromWashington to cover essential spending. Slow growth creates few jobs, so local government provides tax giveaways to seduce corporate investment. Fiscal policy is downgraded—in part because of federal deficits and growth of debt, but also due to contemporary fads in macroeconomic thinking (“Ricardian equivalence,” “growth through fiscal consolidation”).26 Monetary policy is elevated as the only legitimate stabilizing force, and its focus is on fighting inflation—a problem that disappeared a generation ago.

Even mainstream economists like Larry Summers, Robert Gordon, and Paul Krugman argue that secular stagnation is the “new normal.”27 Meanwhile, the United States is left behind by China even as it faces the existential threat of climate change that could make earth uninhabitable within a decade. In the United States and abroad, “populist” movements embrace a rise of alt‐right proto‐fascist leaders who pursue policy designed to further fracture the electorate.

FISCAL REFORM IN THE ERA OF TRUMPISM

As I have discussed, financial affordability is not a problem for the sovereign government. However, state and local governments are fiscally constrained. The “dollar currency area” thus has advantages over the Eurozone—but only if the Federal government uses its policy space wisely. Unfortunately, over the past 45 years or so, the notion that our national government should be “fiscally responsible” has come to dominate. Further, orthodox economists have downgraded the usefulness of fiscal policy and shifted responsibility for macroeconomic performance to the central bank. This means that policy became much more focused on inflation than on employment and economic growth.

When growth is too slow and inflation is low, the Fed lowers its rate target. This will work only on spending that is highly interest‐sensitive—mostly in asset markets. That is why our business cycle has become so dependent on speculative bubbles—in real estate, the stock market, commodities markets, and derivatives that allow betting on financial asset performance. Chronic secular stagnation is relieved by bubbles that inevitably burst. Finally, to the extent that fiscal policy is used, it relies on tax cuts—mostly on higher incomes, on capital gains, and on corporate profits. None of these is very efficient—indeed they tend to reinforce the effects of interest rate cuts, encouraging speculation in assets. Since growth of production and income is not encouraged, tax cuts are accompanied by declining tax revenue that adds fuel to the deficit hawks who worry about unsustainable growth of government debt.

Trump's Tax Cuts and Jobs Act (TCJA) was just the latest in the long series of “reforms.” For our purposes, one of the most important features was that it capped state and local tax deductions at $10,000 while raising the standard deduction. The impacts will be greatest in high tax states such as New York and California, which had used high income, property, and sales taxes to support more spending. It is estimated that a large majority of taxpayers who used to itemize will now take the standard deduction—potentially causing those in high tax states to pay substantially more in Federal taxes. There will be pressure on high tax states and local governments to “reform” taxes—with a likely increase of the regressivity of state and local taxes (generally, the high tax states added to the progressivity of federal taxes so if they cut taxes on higher income households, they will become more like the average state that has highly regressive taxes) (Gordon 2018).

While Uncle Sam has the capacity to distribute income to states on a progressive basis, he has never done enough. According to the Urban Institute, in 2012 federal transfers accounted for 23 percent of state and local government revenue, while property taxes, income taxes, and sales taxes contributed 47 percent (Gordon, Auxier, and Iselin 2016). Even with federal funding, about half the states would fall short of raising sufficient revenue to meet needs even if they raised their own taxes toward the average rates.28 In other words, even with greater revenue effort, half the states cannot meet needs with the sum of their potential revenue plus the current level of help from the Federal government.

State and local governments are responsible for a large percent of the public services a developed country like the U.S. expects:

The United States is a highly decentralized country. For example, state and local governments fund 85 percent of and deliver all public elementary and secondary education….They undertake three‐quarters of all government spending on roads, bridges, water treatment facilities, and other infrastructure…. They incarcerate 90 percent of prison and jail inmates….State and local governments help maintain the social safety net through their own public assistance programs and their participation in joint federal‐state programs, such as Medicaid and Temporary Assistance for Needy Families… (Gordon, Auxier, and Iselin 2016, 46).

This decentralization has its disadvantages because both fiscal capacity and needs vary considerably across the country. As discussed, the Federal government's fiscal capacity is much greater and it can use grants and other transfers to help close the “fiscal gap” (between capacity to raise revenue and funding needs) faced by state and local governments.

In 2014, the federal government distributed $577 billion in grants to state and local governments, equivalent to about 17 percent of total federal outlays or 3.3 percent of GDP. The majority (55 percent) of federal grant dollars went to fund health programs, predominantly Medicaid…. This allocation represents a departure from the 1950s and 1960s, when transportation and community development programs represented a greater share of the total… (Gordon, Auxier, and Iselin 2016, 46).

However, the Federal government has never really provided funding at the necessary level to tackle state and local fiscal gaps and has never provided much general purpose revenue— even at its peak, “general revenue sharing” only amounted to 1.5 percent of Federal spending (between 1976 and 1982) (Gordon, Auxier, and Iselin 2016, 47). Since the end of the 1970s— with the exception of the Medicaid program—Federal transfers to states have not been welltargeted to make up for fiscal gaps.

Moving forward, true “reform” would involve more funding flowing from Washington to state and local governments. While there are many ways to go about doing this, I will suggest four main programs—three of which are closely tied to the Levy Economic Institute's Green New Deal proposal.29

1. Healthcare for All through a single‐payer program formulated along the lines of the traditional Medicare program.

2. A Universal Job Guarantee (JG) program that pays $15 per hour with basic benefits including childcare.

3. A national infrastructure program to “green” the economy and bring it into the 21st century.

4. General Revenue Sharing and/or Block Grants for states, to replace revenue lost by phasing out regressive taxes.

As the first three are part of the Levy Green New Deal (GND) program, I will not go into details here except to summarize impacts on state budgets. The single payer “Medicare for all” (M4A) program would eliminate most Federal and state spending on Medicaid (whether there would still be a role for Medicaid to play would depend on the range of care services covered by M4A; for example, would it include long‐term care in nursing homes?), as well as most state and local government spending on healthcare for their employees and retirees (state and local governments might want to offer extra benefits beyond what M4A provides). Clearly this reform would provide huge savings for state and local governments.

The Levy Institute has simulated the effects of a universal job guarantee program that would directly employ 15 million workers (while creating an additional four million private sector jobs).30 It would raise GDP and national income by about a half a trillion dollars and boost state budget revenues by $53 billion. The JG projects would be undertaken by nonprofits and state and local governments—with the wages and benefits paid by the Federal government. Projects would be largely devoted to care services: care for the environment, communities, and people. The intent is to supplement, not replace, what state and local governments already do, providing a pool of employed labor to undertake new projects. The simulation assumes the Federal government would also provide funding equal to 25 percent of the JG wage bill to cover materials and administration costs. It is possible that state and local governments would need to provide some additional funding for supervision, training, materials, and administration— but most program costs would be covered by the national government.

The JG projects could include “greening” projects but probably would not include any major infrastructure projects due to prevailing wage laws and the Davis‐Bacon Act (which would require higher wages). However, the Levy GND proposal includes substantial new Federal spending to mitigate climate change—“greening” projects (to move to carbon neutral energy sources, etc.) alone would amount to five percent of GDP annually; other public infrastructure costs have not been estimated but would likely amount to several percent of GDP per year. All of this spending would help to revitalize local economies and to provide 21st century infrastructure.

Finally, we need a policy of federal funding for state and local governments that would reduce use of regressive taxes (if not eliminate them). This could be done on a voluntary basis, with built‐in incentives so that revenue lost from reduction of regressive taxes would be more than offset by federal funding. Total funding made available should be linked to the fiscal effort made and as well to the needs. Hence, three factors would be important determinants of the funding provided: fiscal effort, need, and willingness to move from regressive to progressive taxes. Obviously this will require more research and thought to create a workable formula.

The most important point is that the Federal government can and should take more responsibility for providing the funding for state and local government spending. The first step is to understand that the fiscal capacity of the federal government is not determined by its inherited debt ratio, by its tax revenue, or by bond vigilantes. This does not mean that government can spend without limit—spending should be limited by the quantity of resources that can and should be devoted to pursuit of the public purpose. Exactly what is the public purpose and what should be left for pursuit of the private interest will remain a politically contentious issue. But we can first ensure that all of today's resources are fully mobilized, and if used wisely, there will be more resources available for the future. Our most valuable resource— labor—cannot be simply stored for later use; for the most part, whatever we do not use now is lost forever, and its future potential can even be degraded by idleness today.

#### Only MMT-based degrowth financing solves:

#### 1. DEBT SERVICING---you need growth to pay interest unless you are the monetary sovereign. Since states aren’t, the CP would collapse.

Markus Pasche 18, Senior Lecturer Chair of Macroeconomics, Friedrich Schiller University, Jena, “Degrowth and sustainable public finance,” Munich Personal RePEc Archive, 5/30/18, https://mpra.ub.uni-muenchen.de/87109/

1 Introduction

There is an ongoing debate whether a sustainable economic development within the boundaries of the natural environment might be possible even with positive growth rates (“green growth”). From both, theoretical and empirical perspectives, many authors are skeptical and advocate zero growth or even degrowth (see e.g. Ayres (1996), Daly (2013), Mart´ınez-Alier et al. (2010)). An excellent critical review of this debate is provided by Van den Bergh (2011). There is not much literature about the economic implications of degrowth for the functioning of governmental policies such like social security system or public debt management (see. e.g. Malmaeus and Alfredsson (2017)). This paper aims to point to substantial goal conflicts of degrowth with sustainable public finance which arises from quite simple debt dynamics.

Sustainable public finance is here simply defined as the government’s ability to permanently serve the public debt so that the debt/GDP ratio remains stable. In the European Monetary Union it is determined in the Maastricht treaty that this ratio should not exceed 60%. A permanently increasing ratio implies that there is the danger of Ponzi financing public expenditures, and finally getting overindebted so that a country defaults. At the first sight, it seems intuitive that at any GDP level a constant debt/GDP ratio could be maintained. Degrowth seems not to be an obstacle for sustainable public debt per se as long as the debt stock declines with the same rate as the GDP. However, it is shown that this implies permanently negative real interest rates. Moreover, in a shrinking economy (or even with zero growth but technical progress) one could expect that the real return of capital is increasing. To keep the real interest rate below zero, increasing inflation rates are necessary which will harm the economy and are not an indicator of sustainable development. In case of positive real interest rates, however, a constant debt/GDP ratio could be maintained only with a very harsh austerity policy which has permanently to be adjusted to the needs of public debt management, and thus creating huge potential for goal conflicts.

2 Some simple debt algebra

The following debt dynamic algebra is very basic and can be found in a similar form in textbooks like Carlin/Soskice (2015). A much more sophisticated algebra is provided by Escolano (2010) in the IMF technical notes, but with similar results. For the purpose of this paper, I will use the simplest version in order to derive the well-known relationship between real interest and growth rate which is a pivotal issue for the stability of the public debt. We start with defining the public debt services in period t:

[EQUATION 1 OMITTED]

with it as the interest rate (more precisely the average interest rate of all kind of public debt contracts with different maturities: current yield), Dt as the debt level, and repayt as debt repayments in period t.

Total debt then evolves according to

[EQUATION 2 OMITTED]

where dt is the budget deficit in period t (see below).

The primary budget surplus is defined as

[EQUATION 3 OMITTED]

with Tt as the tax revenues, and Gt as the governmental expenditures, excluding the debt services.

The budget deficit is the

[EQUATION 4 OMITTED]

The tax revenues are seen as proportional to the nominal GDP:

[EQUATION 5 OMITTED]

with Yt = PtY real t as the nominal GDP, and the average tax rate taxt as a policy variable.

Nominal growth is simply defined as

[EQUATION 6 OMITTED]

with gt = greal t +  t as the nominal growth rate, and  t as the inflation rate.

Combining all equations (1) - (5) leads to the well-known dynamic equation for the total debt:

[EQUATION OMITTED]

and defining Qt = Gt/Yt as the public expenditure share of the GDP

[EQUATION 7 OMITTED]

Equations (6) and (7) constitute a linear dynamic system. As we are interested in the stability of the debt/GDP ratio qt = Dt/Yt, we can divide eq. (7) by (6) and obtain the dynamic equation

[EQUATION 8 OMITTED]

which has a steady state solution q . Let us assume that the steady state is eco- nomically meaningful, i.e. q  > 0. The stability of a steady state requires a negative eigenvalue of the equation:

[EQUATION OMITTED]

so that the dynamics globally converge to the steady state (see figure 1, left panel). However, this stability condition implies that degrowth or even zero growth (greal t   0) requires a negative real interest rate rt.

A picture containing line, diagram, plot, parallel

Description automatically generated

Even if the eigenvalue of the dynamic equation is less than one, it does not guarantee that the steady state level q  is at its politically desired level ¯q, e.g. 60%. In order to achieve a predefined level ¯q, the governmental tax and expenditure policy, as expressed in Zt, has to be adjusted accordingly by solving eq. (8) with qt+1 = qt = ¯q:

[EQUATION 9 OMITTED]

which is negative in case of degrowth (greal t < 0).

If we accept the standard assumption that physical capital has declining marginal returns and/or assume that technical progress enlarges the marginal productivity of capital and therefore the real interest rate, one could push down this rate only by accelerating inflation rates. This cannot seriously be a goal of economists who are interested in sustainability. The real interest rate can be influenced – but not be determined – by the central bank. It is an endogenous outcome of financial mar- kets which are partially driven by real developments (such like technical progress), changing risk perceptions, central bank policy, among other determinants. The goal of central banks is typically to keep the inflation rate on an optimal level, not to spur inflation because it is needed to achieve negative real rates for managing public debt.

Empirically we see a trend of declining productivity growth and also declining real interest rates in the USA, Japan, and Europe which could be seen as symptoms of a “secular stagnation” (see Sajedi and Thwaites (2016)). Therefore, it might be possible to see negative real interest rates permanently. However, even the current rates are significantly above the level which is needed if we would have degrowth of e.g. 1% per annum. Moreover, it is by no means clear whether this trend is pursued.

So let us consider the case of positive real interest rates and thus an unstable steady state ¯q which means an eigenvalue larger than one (see figure, right panel). Policy variables in this simple algebra are taxt and Qt or simply Zt which can be interpreted as a measure of budget discipline or austerity: increasing Zt imply less discipline, declining Zt indicates austerity policy. However, Zt determines the intercept in equation (8) and has thus no impact on the stability of a steady state. The only way to maintain a certain level of ¯q > 0 is a harsh austerity policy with Zt < 0 (see equation (9) and right panel of graphic) which is then permanently adjusted according to fluctuations of Yt, it, greal t ,  t which then results in fluctuations around ¯q. Permanent adjustments are necessary because ¯q is unstable and therefore a misalignment could lead to a “debt trap” of permanently increasing q levels and finally to overindebtedness and default.

3 Conclusion

A harsh austerity policy where expenditures and taxes are determined by the re- quirement of eq. (9) is supposedly not the desired political prospect which pro- ponents of degrowth might have. There are not much leeways anymore to adjust taxes and expenditures according to economic or ecological needs. Thus, we can conclude that degrowth imposes severe goal conflicts because negative real interest rates (and thus eventually accelerating inflation) in case of a negative eigenvalue or harsh austerity policy in case of positive eigenvalues are necessary to maintain a certain public debt/GDP ratio. Especially in case of an ecological tax reform where the tax base might fluctuate in time, this could be a very difficult task with a lot of trade-offs. On the other hand, an ecological tax reform would also break the strong tie between GDP and tax revenues (see eq. (5). A shrinking economy with stable eco-tax revenues is at least possible from a technical point of view. But this implies an increasing tax burden per unit of income which also has its limits. Moreover, the purpose of eco-taxes is to provide an incentive for a shrinking tax base which will enforce the goal conflicts discussed in this paper.

If drastic austerity should be avoided, it is necessary to set the politically deter- mined goal ¯q close to zero (nearly no public debt). Even with ¯q = 0 a permanent adjustment of Zt will be required in case of positive real interest rates but the fiscal pressure might be minimized. However, this would nullify nearly all financial securities (sovereign bonds) in the banking sector and thus leading to inherent financial instabilities as these securities play an important role as a collateral, for liquidity transfers, and for hedging risks. It should be emphasized that pointing to goal conflicts in case of degrowth is not automatically a plea for positive growth rates. But it highlights the dependencies of public policy on growth.

#### This short-circuits the transition, causing recession---that’ll implode coordinated phasedown, derailing degrowth---that’s **Schmelzer---AND…**

Steve Keen 22, Professor of Economics and Distinguished Research Fellow at the Institute for Strategy, Resilience and Security at University College London, “The Macroeconomics of Degrowth: Can Planned Economic Contraction Be Stable?,” Post-Capitalist Futures, edited by Samuel Alexander et al., Springer Singapore, 2022, pp. 97–105 DOI.org (Crossref), doi:10.1007/978-981-16-6530-1\_9

Any degrowth economic regime must also confront the remnants of its growth-obsessed predecessor. The 2008 crisis was driven by a private debt and credit bubble, and its botched aftermath has resulted in a

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private debt level that still exceeds the peak of the Great Depression (see Fig. 9.2).

Ignoring this debt overhang in a degrowth world could lead to a financial disaster, even if UCCs placed the burden of adjustment primarily on the wealthy. It is highly unlikely that business in the aggregate will be profitable in a degrowth world, especially in one where, since we have failed to take action for so long, the decline in GDP must be that much steeper than Limits to Growth envisioned. Without both a dramatic reduction in outstanding private debt, and a supplementary cash flow to enable corporate and household financial commitments to be met as the physical economy contracts, the financial system could collapse and bring the physical adjustment process to a chaotic halt. Two mechanisms could avoid this fate: a Modern Debt Jubilee (Steve Keen 2017: 117–121) and a Universal Basic Income (UBI) (see Chap. 2 of this volume).

Both can be financed simply by the government creating the necessary money. As both Modern Monetary Theory (Kelton 2020) and the practice of quantitative easing (Coppola 2019) have shown, a currency-issuing government can create as much money as it wishes—the constraints are the effects of such money creation, rather than its feasibility. There is no possibility of a currency-issuing government running out of its own currency.

Nor is there any chance of a domestic-currency-denominated bond sale not being fully subscribed. Though sales of Treasury bonds give the appearance that a government deficit is financed by borrowing from private banks, in fact the deficit itself creates both money in private sector bank accounts on the liability side of the banking sector’s ledger, and excess reserves on the asset side. Bond sales then enable banks to undertake a favourable asset swap, exchanging non-interest-earning reserves for interest-earning Treasury bonds. A failure of the finance sector to buy all Treasury bonds on issue would be a failure to be greedy, which is something we can safely assume won’t happen.

A Modern Debt Jubilee would issue government-fiat-created money to all residents on a per-capita basis. Those with debt would be required to pay their debt down. Those without debt would be required to buy newly issued corporate shares, which corporations would be required to use to pay down corporate debt. This could eliminate the private debt overhang, and democratise the ownership of corporations at the same time.

State payments to individuals during the COVID-19 crisis have also shown that a UBI is practical—again, with the government deficit creating the money required to finance it. This would enable a country’s residents to buy the necessarily basic commodities needed to survive during a sustained period of degrowth—though the problem of whether those commodities could actually be manufactured would become more acute as degrowth continued. This is clearly more a monetary command economy than a capitalist market economy, but such will be necessary to survive the crisis that a period of unconstrained market-oriented growth has given us.

An economically, financially, and politically stable route to reduced GDP is thus conceivable. But is it realistic? My expectation is that it is not. Though these policies would make survival of human society more likely, they would come at the expense of the power of the financial elite of current-day society. The far more likely outcome is that humanity in general and the powerful in particular will delay the decision to act, hoping instead that GDP can return to pre-COVID-19 growth rates, while ignoring the dependence of this growth rate on an increasing use of carbon-based energy that will accelerate global warming.

These policies will also become necessary at a time of multiple crises that will increase social conflict, making initiatives like this harder to implement. We are witnessing this already. The US has been humbled by the coronavirus, and divided by President Trump’s inept and malicious response to it. As I write these words (September 2020), this singular tragedy is being amplified in the drought-stricken state of California by storms that created both the first ever fire tornadoes and a ‘lightning siege’ of 11,000 bolts over a single weekend that sparked 367 wildfires (Fuller 2020). California’s capacity to respond to any one of these crises is diminished by the others: evacuees from fires cannot be housed in dormitories for fear of spreading COVID-19; the prisoner fire crews that normally fight such fires have been halved by the coronavirus itself. Crises like these do not add to each other but multiply each other.

While we squabble, Nature will make the final decision for us.

#### 2. YIELDS---even legally unfettered states can’t borrow the necessary funds.

Kyle Hanniman 20, Department of Political Studies, Queen’s University, “COVID-19, Fiscal Federalism and Provincial Debt: Have We Reached a Critical Juncture?,” Canadian Journal of Political Science (2020), 53, 279–285, doi:10.1017/S0008423920000621

Can the Provinces’ High Debt Levels Persist?

Provincial debts cannot grow forever. Eventually, provinces will have to adjust. But as Figure 2 suggests, current pressure is not as powerful as many assume. Provincial debts are higher than they have ever been, but interest payments to GDP are well below their historical peak. Still, the trajectory of provincial debt is unnerving. Growing debt implies future tax increases and expenditure cuts, as interest payments slowly eat into program expenditures. The risk of market induced austerity is also higher provincially, where economic growth rates are less likely to exceed interest rates and credit shocks are more frequent.

But why, if bailout expectations are high, do provinces not borrow on federal terms? The answer lies in part in the provinces’ place in the global financial cycle. Investors rebalance their portfolios toward less risky and more liquid assets during periods of global financial distress. Subnational bonds are riskier than sovereign debt. (There is always some possibility, however low, that the federal government will not come to a teetering province’s rescue.) They are also less liquid. Accordingly, their relative value declines when market conditions deteriorate. These “flights to quality” and “liquidity” cause intergovernmental spreads to

[FIGURE 2 OMITTED]

diverge. They can also make it difficult for provinces to borrow. With the market’s desired spread rising and secondary trading in provincial bonds thinning, provinces and their underwriters (who buy the debt and resell it to investors) struggle to find a market-clearing price (a problem far bigger for provinces with small and illiquid pools of debt than it is for Ontario).

In theory, markets are never closed. Provinces can borrow as long as they pay a premium over unreliable spread indications from secondary markets. Perhaps but provinces have been known to sit out these periods and issue short-term debt instead. This increases refinancing risk, but keeps borrowers from spooking investors with desperate spread concessions. These time-outs are usually short, but not always. Newfoundland and Labrador (NL) went six months without issuing a bond in 2015–2016, despite significant borrowing need (Hanniman, 2018).

If, prior to the pandemic, there was an immediate threat to provincial borrowing, it was this: markets were generally happy to lend to provinces but would occasionally recoil or demand higher spreads in the face of global liquidity shocks. These shocks have been too short to trigger a repayments crisis. But perhaps all that was needed was a national recession to amplify their effects—something that would send deficits and provinces’ liquidity and credit premiums soaring.

The COVID-19 Shock

From late February to early March, the economic and financial gravity of the pandemic began to become evident. Stock markets plunged and the provinces’ bond spreads spiked. Resource-based provinces (also reeling from plunging oil prices) were hardest hit. NL was briefly unable to borrow. British Columbia (with its triple-A rating) and Ontario and Quebec (with their liquid pools of debt) fared best. But all provinces saw their 10-year bond spreads increase 66 to 102 basis points in a month—a faster increase than anything observed during the 2008 crisis.

And yet the provinces have weathered the crisis reasonably well. All-in borrowing costs have fallen2; all provinces, including NL, have managed to issue long-term debt; and borrowing has been proceeding at a rapid pace. Demand for provincial bonds has been shaky at times, but the Bank of Canada has committed to buying up to 40 per cent of each of the provinces’ short-term debt offerings through the Provincial Money Market Purchase (PMPP) program and $50 billion of bonds with a maturity of 10 years or less through the Provincial Bond Purchase Program (PBPP).3 These interventions have helped stabilize the market, but they are liquidity, not solvency, measures. They do not address the provinces’ long-term challenges.

Transformative Solutions?

Many believe surging provincial debts have greatly increased the odds of meaningful federal efforts to stabilize them. The pandemic may, in other words, have brought Canadian federalism to a critical juncture.4 Definitions of critical junctures vary, but we often think of them as moments in which the structural constraints on political action are briefly but substantially relaxed, "with two main consequences: the range of plausible choices open to powerful political actors expands substantially and the consequences of their decisions for the outcome of interest are potentially much more momentous” (Keleman and Capoccia, 2007: 343). Have we really reached this point with respect to provincial debt?

I approach this question with great humility. The federal government is still coping with the pandemic and may not turn to the provinces’ long-run challenges for some time. We have yet, in other words, to reach a critical choice point, and a lot could happen before we do. We also want to avoid the pitfall of radically dividing history into periods of institutional stability and change. Like all evolutionary systems, Canadian federalism is in a constant state of adaptation, and it is often the accumulation of small choices (to say nothing of their unexpected effects) that have the biggest long-term impact. Still, the literature has identified a number of paths the federal government could take to restore provinces’ fiscal sustainability, and I will consider the political and technical potential of two. The first, reforming the transfer system, is popular in Canada’s academic and policy circles. The second, national fiscal rules, is widely discussed in the comparative federalism literature.

Reforming the Transfer System

Many believe that increasing federal transfers could significantly lower provincial debts. Proposals fall under two categories: temporary measures to address the pandemic and lasting measures to address enduring challenges. The latter include a larger and needs-based Canadian Health Transfer to offset rising healthcare costs and an enhanced Fiscal Stabilization Program (FSP) to smooth provincial revenue shocks (Béland et al., 2020). These proposals could go a long way toward realigning fiscal capacities and responsibilities. But how likely is the federal government to implement them?

The federal government has already announced $14 billion to help provinces and territories reopen their economies. This will provide significant relief, but it will not be nearly enough to stabilize provincial debt. The provinces’ fiscal woes preceded the crisis, and the announcement falls well short of their net borrowing requirements. Thus, the provinces may need additional short-term support and long-term transfer reform.

There is good reason to think the latter is coming. Ottawa was poised to enhance the FSP before the crisis, and the current situation will only strengthen calls to offset provincial revenue shocks. The pandemic has also piqued federal interest in long-term care and other areas of provincial jurisdiction, and Ottawa’s aggressive fiscal response in recent months may have raised popular expectations of its social policy role. But there is also reason to believe the response will be restrained. Several provinces have already voiced their opposition to federal conditions, and that may affect the support Ottawa is willing to provide. Ottawa may also come under pressure to balance its own budget, if not from bond markets (interest rates remain low), then from political forces. Material measures to bolster provincial fiscal resources are not a given.

Nor are they guaranteed to balance provincial budgets. Comparative evidence shows increasing transfers often increases deficits, particularly if supports shield (or are perceived to shield) borrowers from irresponsible choices (Rodden, 2006). Pandemic-related transfers are temporary and unlikely to create this perception. And Ottawa can mitigate moral hazard, as it generally does, by allocating transfers according to clear and exogenous criteria that opportunistic provinces cannot renegotiate or game. But Ottawa will also face pressure to provide ad hoc supports (such as the Atlantic Accords), and no amount of fiscal engineering is likely to significantly alter the market’s bailout expectations. Bond markets will continue, therefore, to let provinces borrow more than they can sustain. Additional transfers may increase the capacity to balance budgets, but without appropriate incentives, they may not be enough.

National Fiscal Constraints

In his landmark book, Jonathan Rodden describes two mechanisms for managing subnational debts: a market-based approach, in which bondholders contain deficits with higher risk premiums, and a hierarchical approach, in which the central government does the disciplining (Rodden, 2006). Often hierarchy is a consequence of failed market surveillance. Investors allow units to borrow more than they can repay, because they expect the center to bail them out. A crisis emerges and the bailout comes, but in an effort to limit moral hazard, the centre demands or negotiates a degree of fiscal restraint. Fiscal rules have yet to emerge in Canada despite the provinces’ periodic market struggles. Why?

For starters, Canada is a deeply federal society with powerful regional identities. A conditional bailout would be met with about as much enthusiasm as a structural adjustment from the International Monetary Fund. The provinces and federal government have generally tried, therefore, to avoid it. In 1936, Alberta’s Social Credit government took avoidance to the extreme, opting to default rather than accept the supervision of a federal loans council (a condition of the next bailout).

A second obstacle is institutional. Renegotiating intergovernmental burdens is challenging in any federation. But certain institutions—notably a vertically integrated party system—help facilitate distributional bargains (Wibbels, 2005). Canada lacks this institutional machinery.

None of these obstacles would matter if provinces faced a prolonged repayments crisis. They would have to accept Ottawa’s dictates or default. But it is not clear, outside of the Great Depression, when that moment would have been. Saskatchewan flirted with default in 1993, but quickly turned it around, first with a small and unconditional bailout, which allowed it to maintain its investment-grade credit rating (MacKinnon, 2003), and then with austerity, which was motivated by the fear of requiring a larger and thus conditional level of support (Poitras, 2018). This combination (austerity and just enough federal support to see a province through) is an effective way of avoiding the centralizing alternative.

Conclusion

The pandemic has put enormous pressure on provincial budgets. It has also increased pressure for federal solutions. Changes to basic transfer programs seem increasingly likely, suggesting we have reached a critical juncture in this narrow sense. But the most obvious path to fiscal sustainability (a combination of additional transfers and national fiscal rules) likely remains closed.5 Stabilizing provincial debt will likely require creative solutions.

### States CP---AT: Borrowing

#### Borrowing fails in the long-run---causes downgrades which increase borrowing costs AND interest payments, which themselves trigger our scenarios, AND scare off the tax base which reduces revenue

Jennifer Weiner 13, chair of the Boston Federal Reserve Board, December 2013, “Assessing the Affordability of State Debt,” New England Public Policy Center, Research Report 13-2

I. Introduction States in New England and across the nation commonly issue debt in the form of bonds to finance the construction of roads, schools, and other capital investment projects. Bond financing allows these projects to commence in a timely manner, and also enables the costs of long-term assets to be shared by those who will benefit from them during the years of their useful life. Yet while borrowing plays a useful role in state finance, debt levels can, if unchecked, limit a state’s ability to meet other objectives. During the Great Recession and the associated state fi scal crisis, confl icting views on state debt emerged. On the one hand, some argued that states should take advantage of historically low interest rates by issuing bonds for infrastructure investments. Such borrowing, it was reasoned, would allow states to make needed long-term capital improvements while at the same time stimulating the economy in the short term. The American Recovery and Reinvestment Act of 2009 (ARRA) included several initiatives to further encourage capital borrowing, the most famous being the Build America Bond (BAB) program. This initiative increased the existing federal subsidies for state and local government bonds, while at the same time broadening the market to new classes of investors. In speaking of the BAB program, then-Treasury Secretary Timothy Geithner noted its potential short- and long-term economic benefi ts: “‘Increasing state and local funding for capital projects doesn’t just help rebuild our aging infrastructure,’ said Geithner, ‘It gets Americans back to work.’”1 While some stakeholders, including the federal government, were encouraging states to issue bonds to promote the economic recovery, others were questioning whether state governments were already financially overextended. The Great Recession had caused tax revenues to plummet, precipitating a fiscal crisis in which states across the nation were faced with unprecedented budget shortfalls. These challenges—along with stories about many states’ massive unfunded liabilities for pensions and other retirement benefits, the recent federal debt ceiling controversies and the debt crises in several European countries—raised concerns about the ability of state governments in the United States to service their debt while meeting other obligations. The New England states have not been immune to debt-related concerns. For example, in 2012 Maine’s Governor Paul LePage made headlines by delaying the issuance of bonds that voters had approved three years earlier; he argued that it would not be prudent for the state to add to its debt until its fi scal house was in order.2 A well-known conservative commentator in New Hampshire described a “debt explosion” occurring in the Granite State, noting that the state’s general obligation debt grew more between 2007 and 2011 than it had over the prior 20-year period.3 Connecticut’s high fi xed costs associated with its outstanding bonded debt was cited as a factor in the 2012 downgrade of the state’s credit rating by one of the leading Wall Street rating agencies.4 In the wake of the Great Recession, these contradictory attitudes towards state debt have essentially magnifi ed a tension that exists even in more normal economic times: namely, the need for states to balance their capital investment needs with their ability to meet debt service requirements given other priorities and obligations. This tension raises an important question: how can states gauge what is an affordable level of debt? This report highlights some of the issues that must be considered by policymakers or analysts when assessing the affordability of state debt. It opens with a discussion of what affordability means and why it is important. The next section considers issues surrounding the measurement of state debt. Subsequent sections discuss commonly used metrics and approaches for assessing debt affordability, and provide illustrative data for the New England states. The paper concludes with some recommendations to help guide future affordability assessments, which are previewed below: • Improve the transparency surrounding state debt in its various forms. There are many different types of obligations that may be described as state debt. Clear and readily available information can help to promote rational decisionmaking and potentially discourage unsound or risky borrowing practices. • Use multiple defi nitions of state debt. Affordability assessments may focus primarily on net tax-supported debt—the obligations most typically supported in a state’s general operating budget—but should also consider broader measures of state debt to better capture the overall burden borne by residents and businesses. • Use multiple debt burden ratios. No single affordability metric is perfect. At a minimum, the concepts of debt service-torevenues and debt-to-personal income can serve as reasonable gauges of near-term and longer-term burden. • Re-examine existing debt limits. Limits that are too high can reduce a state’s fi scal fl exibility, yet ceilings that are too low can hamper a state’s ability to invest adequately in capital infrastructure. Options such as a debt ceiling range or a target-and-cap can provide states with greater fl exibility while placing a constraint on overall debt levels. • Exercise care with benchmarking debt against other states. Cross-state comparisons can help to inform affordability assessments, but states should also take care to consider their own unique circumstances. • View debt affordability assessment as a complement to capital planning. Ideally, debt affordability assessments should be used in conjunction with capital planning, as this can help states to ensure that their critical infrastructure needs are met while also maintaining fi scal discipline II. What is the Concept of State Debt Affordability and Why Does It Matter? The issue of affordability comes up each year as states determine how much new debt they can prudently issue to support capital projects. In principle, the amount of new debt deemed affordable should depend on cost-benefi t analyses of the projects to be fi nanced. Under this theoretical framework, decisions about capital projects and any debt used to fi nance them are made at the margin, irrespective of a state’s existing level of debt or debt service—meaning the amount of interest and principal due in a particular period. When borrowing costs are low, one would expect more projects to pass the cost-benefi t test, leading to increased debt issuance.5 In practice, however, states usually do consider how issuing new bonds will add to their existing debt burden; indeed, many are subject to limitations on overall debt levels. There are several arguments in favor of such constraints. First, proponents of a capital project may overstate its benefi ts and understate its costs. Because cost-benefi t calculations are not always transparent, it may be diffi cult for the public to determine when such mis-estimation occurs. But even the most objective cost-benefi t analysis typically requires making some assumptions or judgment calls. For example, certain benefi ts and costs are not easily monetized. There are also elements of uncertainty. It is impossible to know exactly what a state’s economic or revenue picture will look like when a future debt service payment is due or what other competing priorities may loom large at that time. Policies aimed at constraining debt levels can help to provide states with some future fi scal breathing room. Another reason for states to care about overall debt levels is simply that the overall benefi ts and costs associated with a project may differ from the project’s fi scal benefi ts and costs. Many debt-fi nanced projects may provide large benefi ts—such as the safety afforded by building a new bridge—but do not necessarily generate revenue to cover their debt service costs. Principal and interest payments associated with such investments must compete with other priorities for general tax dollars and other nondedicated revenues. Finally, credit rating agencies look at a state’s overall debt load when rating a new debt issue. A low credit rating may increase a state’s borrowing costs or can even make it diffi cult for a state to attract investors.6 Indeed, the concern about credit ratings appears to be a primary factor in motivating states to constrain their borrowing. Bearing all of these factors in mind, the concept of debt affordability refers not to the outcome of a cost-benefi t analysis for an individual project, but more broadly to a state’s ability to repay all of its obligations without negatively impacting the provision of ongoing public services or raising taxes to anticompetitive levels.7 Debt affordability is an important concept for state governments to consider, and not only because of the potential implications for state borrowing costs. For instance, the affordability of a state’s debt can also affect the government’s long-term fi scal sustainability— this concept refers to a state’s ability to balance its revenues and expenditures over the years, while providing the services that the public demands and is willing to pay for. If a state’s debt service requirements are too high, they can squeeze out funding for other priorities or lead to budget imbalances. The affordability of a state’s debt may pose additional implications for the state’s economic competitiveness. States vie with one another based on, among other things, the public services they offer and the taxes they levy. A debt load that forces a state to cut back on public services or raise taxes to high levels relative to other states can make it more difficult to attract or retain residents and businesses. By the same token, a low relative debt burden could be a sign of low infrastructure investment, which potentially could offset any other competitive advantage a state might have.

### States CP---AT: Borrowing---Fails

#### Investors won’t loan money---instead, its prospect provokes a sell-off of existing debt that magnifies our internal links

Sean McCarthy 17, PIMCO’s head of municipal credit research, “A Troubled U.S. State Budget Process Puts Muni Investors on Alert,” PIMCO, 8-10-2017, https://blog.pimco.com/en/2017/08/A%20Troubled%20US%20State%20Budget%20Process%20Puts%20Muni%20Investors%20on%20Alert

Outcomes from the most recent state budget season, which concluded for most U.S. states on 30 June, underscore the need for caution among municipal bond investors: 10 states started the new fiscal year without a signed budget, and 23 made midyear budget cuts in fiscal 2017, the most since 2010 (according to the National Association of State Budget Officers). Mounting political risk since the beginning of the year, along with the oft-cited higher pension costs and slowing tax collections, amid a backdrop of tepid nominal growth and soft inflation, all contributed to these outcomes. But political risk, which is inherent to municipal bond investing, has grown more acute since the November federal election as the new administration and Congress consider policies that could further exacerbate the budget process in some states next fiscal year. We believe credit dispersion in municipals may grow and bouts of credit spread widening may be more common across issuers unable to adjust to these realities. For investors, proactive assessment of credit risk will be critical in a market that too many investors think of as solely a duration call. Are investors mispricing risk? We’ve observed various recent instances of what we view as mispriced credit risk in the general obligation (GO) segment of the municipal market. GO debt typically trades rich relative to similarly rated essential service revenue bonds, based in part on the perception that a pledge of the “full faith and credit” or taxing authority of the issuer could support a GO claim without limitation. But not all GOs are created equal, and investors may overestimate GO credit quality and, consequently, misprice risk in the form of required credit spreads. The unfolding of recent fiscal crises (in Detroit and Puerto Rico, for example) has demonstrated that multiple claims often compete for limited resources, and the positioning of creditors in the payment waterfall may not go as expected. For instance, GO bondholders may find their priority subordinate to essential services (which may be subjectively defined) or perceived priority claims of officials and politicians (like retirement obligations). Credit pitfall versus credit opportunity In recent years, the market has witnessed several large borrowers experience “super-downgrades” (multiple notch downgrades by rating agencies). While investors may be quick to draw comparisons between rapidly deteriorating credits and those with real solvency and liquidity concerns (such as Puerto Rico and Detroit), municipal defaults still remain relatively rare. However, credit risk in the form of spread widening and/or credit downgrades can affect income-oriented investors constrained by ratings, or simply fearful they may be holding the next GO headed toward bankruptcy. These investors may prematurely sell without first evaluating the full distribution of potential outcomes and assigning probabilities to each scenario. This strategy of careful assessment of an evolving situation, along with a proactive approach to credit surveillance, can help avoid an unnecessary monetization of losses. Successfully differentiating between a hopeless fiscal crisis and one that offers the debtor a way out can be a significant driver of alpha and is among the primary goals of our municipal credit research. Illinois offers a key case in point. While its long budget impasse created a number of challenges, our portfolio positioning continued to reflect our view that these issues did not materially increase the state’s probability of default. Although Illinois has high balance sheet leverage emanating from one of the lowest-funded pension systems in the nation, it has better funded these contributions in recent years. Macro conditions in the state also remain relatively sound: The economy is well-diversified, and income taxes – despite a 32% headline increase – are still reasonable for the region. In short, knowing the difference between a manageable – if painful – credit hurdle and an impending default can be the difference between incurring a loss and generating alpha.

#### States are already overextended---more borrowing makes the pool of fiscal resources smaller

Jonathan Rodden 11, Professor, Department of Political Science, W. Glenn Campbell and Rita Ricardo-Campbell National Fellow, Hoover Institution, Stanford University,“Market Discipline and U.S. Federalism,” in Peter Conti-Brown and David Skeel, eds., When States Go Broke: Origins, Context, and Solutions for the American States in Fiscal Crisis, Cambridge University Press, July 2011, https://web.stanford.edu/~jrodden/rodden\_chapter\_final.pdf

5. Default and the Foundations of Market Discipline While difficult, by no means is it impossible for a central government in a federation to make a credible “no bailout” commitment. A very costly and credible signal is sent when a crisis arises, the bailout game reaches the final stage, and the central government simply turns its back and allows default. Such an event would send a strong signal to creditors and other governments, providing a firm foundation for market discipline going forward. This is the road not taken in Europe. However, this is exactly what happened in the United States in the 1840s. After states had engaged in large-scale borrowing in order to build canals, railroads, and other internal improvements, a fiscal panic led to sudden reductions in revenues, and without reliable tax revenues, several states were unable to service their debts. Many of the creditors were British citizens, and Britain threatened military attack if the U.S. federal government did not assume the debts of the states (Ratchford 1941) A coalition of insolvent states assembled a bailout proposal, attempting to buy the support of less indebted states by offering to create a per capita transfer. However, in a pivotal moment in the history of U.S. federalism, the bailout proposal failed in the legislature. Representatives of solvent states constituted a slim majority in the legislature (Wibbels 2003), and bailout opponents turned public opinion against the proposal in those states. Perhaps another important reason for the decision can be traced, once again, to the identity of creditors, most of whom were foreign individuals rather than important domestic constituencies. Considerable uncertainty about the federal government’s payoffs in the dynamic bailout game was resolved. Several states repudiated their debts, and the entire federation was cut off from international capital markets. State governments, citizens, and creditors learned a painful lesson: the U.S. states are sovereign debtors. In order to approach credit markets again, states made substantial reforms, including the introduction of direct taxation and the institution of various balanced budget requirements. Creditors learned to carefully assess the states’ revenues and obligations. This episode marked the beginning of a long period of successful market discipline among the U.S. states that was marred only by repudiations of debts of some Southern states in the aftermath of the Civil War. Unlike the political unions described above, the U.S. federal government has not endeavored to limit the deficits or debts of the U.S. states. Yet without any hierarchical oversight or regulation, in comparison with federated entities in most other federations, the deficits and debt burdens of the U.S. states have been quite low throughout the 20th century, especially considering the very large role they play in providing basic public services and building infrastructure (see Rodden 2006). The states typically adjust to revenue downturns rather quickly, and most likely because of their balanced budget rules, they do not smooth expenditures over the business cycle through borrowing. In fact, the revenues and expenditures of the U.S. states are both extremely pro-cyclical. Negative revenue shocks are met with rapid expenditure cuts (Rodden and Wibbels 2010). In the most recent downturns, these cuts have been so severe as to almost completely offset the impact of any federal government attempts at fiscal stimulus (see Aizenman and Pasricha 2011). Empirical studies suggest that the balanced budget rules that emerged in the 1840s are an important part of the explanation for cross-state variation in the speed of adjustment (e.g. Poterba 1995). While states have devised a variety of tricks and gimmicks to circumvent their balanced budget requirements, including delaying payments into the next fiscal year and underfunding pensions, these rules are probably part of the explanation for the fact that as a share of gross state product, general obligation bond debts of the states have been modest throughout the 20th century. State governments have been quite sensitive to credit ratings, and the need to keep debt burdens under control in order to keep borrowing costs down is an important part of the political discourse in the states. Credit downgrades are politically costly for governors. The empirical literature suggests that bond yields and credit ratings are quite sensitive to changes in states’ debt burdens (see Bayoumi, Goldstein, and Woglom 1995, Rodden 2006), more so than in most if not all other federations In short, the United States is one of a very small number of federations, perhaps also including Canada and Switzerland, in which the central government has been able to convince market actors that the constituent units should be treated as sovereigns, and where fiscal decisions of the constituent units have been consistently constrained by credit markets for much of the 20th century.

### States CP---AT: Borrowing---Tax Base

#### Just borrowing to fix the issue causes the tax base to move away which reduces revenue.

Brian Galle 12, Boston College law professor, “Beyond Bailouts: Federal Options for Preventing State Budget Crises”, 4-1, http://lawdigitalcommons.bc.edu/cgi/viewcontent.cgi?article=1415&context=lsfp

State budgeting differs from national budgeting in several crucial respects. Perhaps most importantly, states cannot print their own money.37 As a result, this age-old method of raising revenue via currency debasement is simply not available to state governments. Two other factors, though, account for many of the differences we focus on here. First, interstate migration of both households and firms is relatively common in the United States.38 Second, citizens of one state do not vote in other states, with the result that each state’s officials have little reason to care about the impact of their actions on residents of other jurisdictions.39 In contrast, it is very costly to leave the United States altogether, and the national government is relatively more sensitive to the welfare of the entire country.40 The first factor, the threat of exit, has made it challenging for states, and especially local governments, to raise money to pay for social insurance during recessions. Many studies have shown that taxpayers consider relative burdens when deciding where to live or do business.41 Further, the credible threat of exit also gives additional political voice to the most mobile.42 For similar reasons, states also cannot easily borrow; since public debt augurs higher future taxes, large debt burdens, too, create exit pressure.43

#### More ev---the tax base would just move

Brian Galle 12, Boston College law professor, “Beyond Bailouts: Federal Options for Preventing State Budget Crises”, 4-1, http://lawdigitalcommons.bc.edu/cgi/viewcontent.cgi?article=1415&context=lsfp

As for borrowing, the ability of state residents to migrate to other jurisdictions limits the extent to which states can borrow against future resources. Unlike the federal government, state and local governments must be attentive to the risks of eroding their tax bases through the outmigration of taxpayers averse to excessive debt levels. This concern is especially acute with regard to the wealthiest taxpayers, who are both the most readily mobile segment of the population and the most likely to bear the burden of future debt repayment obligations. Even if taxpayer exit were not a constraint, most states are limited in their capacity to borrow because of constitutional limitations adopted out of fear of excessive debt.8 These limitations were enacted in part out of a concern that voters or officials could be present biased— that is, they may weigh the benefits of spending today more heavily than the cost of repaying tomorrow. Voters may be present biased either because they expect to move somewhere else before the bill comes due or because of a general psychological tendency to underestimate future costs. Officials are people too, and so could be subject to a similar psychological bias; they may also rationally expect that they will be out of office before the burden of debt repayment materializes. In recognition of the risks of excessive borrowing, most states have constitutional limitations on state indebtedness as well as some form of balanced-budget requirement.

### States CP---AT: Local Currencies

#### Local currencies can’t happen---monetary systems with acceptance can only be established by sovereigns.

Kristofer Dittmer 13, PhD in Ecological Economics, “Local Currencies for Purposive Degrowth? A Quality Check of Some Proposals for Changing Money-as-Usual,” Journal of Cleaner Production, vol. 54, 09/01/2013, pp. 3–13

7.1. Local currencies: problematizing the prospects

Focussing here on the findings that do suggest prospects for advancing degrowth, there is some evidence that LETS can facilitate informal resale, repair, and sharing of commercially produced goods. However, this does not seem to justify the heavy burden of managing LETS (Aldridge and Patterson, 2002; North, 2010c), compared to more straightforward internet-based platforms like Freecycle and eBay, which unlike LETS have a proven ability to operate with memberships of more than a couple of thousands. There is evidence that LETS can support more emancipated, frugal livelihoods, as long as certain – rather unusual – conditions are met. This is a valid basis for emphasizing the breadth of the realm of possibility, although the scarcity of successful examples questions their replicability. However, the long-term outlook of this “Escaping from the economy” approach (Fournier, 2008) is more problematic. Optimistic readings of possibilities for alternative livelihoods point at tendencies of jobless growth that render increasing numbers of people superfluous to the interests of capital, the potentially liberatory consequence being that “the state cares little how they choose to live their economic lives” (North, 2007: 181). This historical conjuncture may, however, come to an end with the age of cheap fossil fuels (making energy scarce relative to labour), raising questions about the place of this strategy in degrowth visions of socio–ecological transition. This predicament revolves around the uncertainty about the temporal remove of the coming of enduring fossil fuel scarcities, parallelling the ongoing debate about whether proposals for statutory reductions in working time make sense in the autumn of the fossil fuel era (Kallis, 2013; Sorman and Giampietro, 2013).

A scientific basis, although weak, exists for promoting person-to-person time banks as tools for inclusive community-building, but the question whether they mitigate consumerism remains unanswered. However, their bureaucratic nature and modest confinement to unskilled services keeps them low on the list of mobilizing degrowth proposals. HOUR currencies do not stand out with regard to any of the criteria considered, so there is little to recommend them as concrete proposals for advancing the degrowth project. This is not to belittle the usefulness of non-convertible paper currencies for coping with situations where the formal economy and the state withdraw from covering the consumption needs of the population. Coping with chaotic, involuntary degrowth, as non-convertible barter currencies helped millions of Argentineans do in 2001–02 (Dittmer, 2012; Gómez, 2009; North, 2007), is nevertheless different from advancing the project of voluntary degrowth, which is the subject of this article.

The case for advocating convertible paper currencies for degrowth is largely based on their potential to drive the localization of supply chains. Unfortunately, ten years after the creation of the Chiemgauer, there is still no research clarifying to what extent this, the only clear CLC success, has actually brought about import substitution rather than a mere currency switch. Positive results from eco-localization research are required if the degrowth movement is to advocate CLCs on a solid basis. Moreover, it would have to be ascertained whether CLC-driven localization makes ecological sense. The desirability of CLCs as innovations for degrowth is, however, only partly answered by their eco-localization capacity. Their advantage is that their creation lies within the agency of grassroots groups, and that their fiscal endorsement may lie within the agency of local governments. But this does not qualify them as first-best policy proposals for central governments. In fact, the CLC strategy of creating friction in monetary space (mainly by means of a redemption fee) is arguably a second-best option, since it imposes additional costs on all interregional exchanges, payments, and transfers, regardless of whether they involve interregional material flows or not. This goes against the ecological tax reform principle “Tax bads, not goods” (Daly and Farley, 2004: 385). To the extent that the degrowth movement aims to address central governments with policy proposals for eco-localization, the first-best option would be a tax on transport fuels, not CLCs.

7.2. Local currencies as two varieties of utopian socialism, and a less utopian alternative

As noted in Sec.3, local currency activism has been likened to the 19th century utopian socialism of Owen, Proudhon, and their followers (North, 2007, 2010a; Powell, 2002). Taking this further, local currencies can be categorized as two distinct utopian socialist approaches, which may be referred to as the behind-society’s-back variety of most LETS and HOUR currencies, and the appeal-to-elites variety of most time banks and CLCs. The former are modern examples of the approach that, according to Marx and Engels, “renounces the revolutionizing of the old world by means of the latter's own great, combined resources, and seeks, rather, to achieve its salvation behind society's back, in private fashion, within its limited conditions of existence, and hence necessarily suffers shipwreck” (Marx, 1963 cit. in Levitas, 2011: 61). As North has argued (see Sec.3), the renunciation of society's combined resources is not necessarily a recipe for failure any longer, given the relatively large resources to which ordinary people in advanced capitalist countries have access today. Nevertheless, thinking of the bleak record of LETS and HOUR currencies in terms of the consequences of renouncing society's combined resources retains large explanatory power. For example, a frequent stumbling block of these autonomist currencies is volunteer burnout (Aldridge and Patterson, 2002; Collom, 2005; North, 2010c; Schussman, 2007: 108), a consequence of the divide between organizational resources available vs. required for their management. More importantly, if by “society's combined resources” we understand the state's power to impose tax liabilities on its citizens, it becomes apparent that ordinary people do not today, any more than in Marx's time, command on their own this powerful means of creating demand for a currency. The state's imposition of a tax liability, when burdensome enough to discharge, has been characterized as a sufficient (although not a necessary) condition for triggering general acceptance, as money, of the thing that the state announces that it will accept in payment of the tax (Wray, 1998: ix and passim). This taxes-drive-money argument, the long intellectual history of which is only recently being uncovered (Forstater, 2006), is supported by historical studies of the monetization of pre-capitalist and colonial societies (Forstater, 2005; Goodhart, 1998; Wray, 1998, 2012: 57–61).

Time banks and CLCs echo the appeal-to-elites utopian socialist approach that was also criticized by Marx and Engels:

“Socialists of this kind (…) want to improve the condition of every member of society, even that of the most favoured. Hence, they habitually appeal to society at large, without distinction of class; nay, by preference, to the ruling class. For how can people, when once they understand their system, fail to see in it the best possible plan of the best possible state of society? Hence, they reject all political, and especially all revolutionary, action; they wish to attain their ends by peaceful means, and endeavour, by small experiments, necessarily doomed to failure, and by the force of example, to pave the way for the new social Gospel” (Marx and Engels, 1976: 515).

Appealing to elites is not negative per se, but becomes problematic when it involves downplaying radical objectives – rejecting all political, especially revolutionary action – perhaps condemning a local currency to ecological irrelevance from the very beginning. The Bristol Pound has taken the mainstreaming represented by CLCs one step further by excluding any mentioning of eco-localization or even the Transition Network from its webpage (Seyfang and Longhurst, 2012), which may explain its success in obtaining fiscal endorsement from the Lib Dem city council. Future research would have to tell whether the Bristol Pound and similar local government-endorsed currencies retain any capacity to resist assimilation into conventional local growth agendas, and contribute instead to (zero-sum) import substitution. In the case of time banks, the further deradicalization of an already fairly mainstream innovation – exemplified by Spice – is indicative of the limitations associated with dependence on public funding. Furthermore, opportunistic exploitation of existing policy agendas can lead to catastrophic failure as funding is withdrawn subsequent to agenda changes or negative assessments of the currency system's capacity to deliver on policy expectations (North, 2003; Seyfang and Longhurst, 2012).

In so far as the existing monetary system is biased against social justice and ecological sustainability, the degrowth movement's advocacy of alternatives to money-as-usual is coherent with its objectives. However, the historical conditions for the establishment of strong local currency systems do not seem to materialize, and perhaps never will, given that “the historical generalization that the successful creation of stable monetary spaces has been the work of states is indisputable” (Ingham, 2006: 273). Even if local currency groups adopt a state's money of account (as CLCs and HOUR currencies have, but not time banks or libertarian LETS), they would still struggle to get their money-things accepted unless the state commits to accept them in payment of taxes. Moreover, if the local currency is not the exclusive means of discharging a tax liability, the additional transaction costs it represents vis-à-vis conventional currency would still minimize its acceptability unless the tax liability is sufficiently difficult to meet to make earning local currency worthwhile. Whereas such far-reaching fiscal endorsement, and consequently also strong and stable local currency systems, remain highly unlikely, the time may have come for local currencies as temporary, unstable coping mechanisms helping people to survive in times of involuntary, chaotic economic degrowth, but that is not the subject of this paper (see e.g. Dittmer, 2012; Sotiropoulou, 2011).

### States CP---AT: Repeal BBAs

#### Both repeals AND exceptions from BBAs reduce revenue by increasing borrowing costs AND freaking out bond markets

Joe Stone 14, Professor Emeritus of Economics at the University of Oregon, PhD, Economics, Michigan State University, M.A., Economics, Michigan State University, July 20, “Do balanced-budget rules increase growth?” https://mpra.ub.uni-muenchen.de/57605/13/MPRA\_paper\_57605.pdf

VI. DISCUSSION Given the regression estimates in Table (2), we are now in a position to discuss whether or not BBRs change the effect of debt on growth, and if so, how. The significantly positive coefficient for the ACIR-debt interaction suggests that the answer to the first question is ‘yes’: more stringent BBRs make debt more productive, consistent with the WW view that these rules increase the productiveness of debt by restricting borrowing to productive public infrastructure. This effect could work either directly through the greater productivity of investments in public infrastructure or more indirectly by assuring lenders that future borrowing will be limited to public infrastructure, resulting in lower costs of borrowing. Both channels are consistent with the evidence in Alt and Lowry (1997) and others that borrowing costs are lower for states with more stringent budget rules. How large is the effect of BBRs on the productivity of debt in terms of growth? With no BBR in place (i.e., with an ACIR index of zero) and evaluated at sample means, the coefficients in Table (2) indicate that a one standard-deviation increase in the stock of debt (an increase of 5.6 percent of personal income) decreases the steady-state (five-year) growth rate by 17.4 percent of real income—just over 3 percent per year. However, with a strict BBR in place (i.e., with an ACIR index of 10), the coefficients predict instead an increase in the steady-state (fiveyear) growth rate of about 15 percent for a one-standard-deviation increase in debt. VII. POLICY CONSIDERATIONS Evidence elsewhere indicates that balanced-budget rules [BBRs] lower borrowing costs and restrain levels of state and local debt. Our evidence also indicates that high levels of debt can slow growth, but our unique contribution is to provide an arguably well-identified test of the hypothesis that state-level balanced-budget restrictions [BBRs] in the U. S. increase growth by restricting borrowing to productive public infrastructure. Evidence that state balanced-budget restrictions increase growth via this channel provides the first formal test of the WW hypothesis and adds a new perspective to the effects of balanced-budget rules by suggesting that the benefits of tax smoothing and fiscal flexibility (permitted in the absence of a balanced-budget restriction) may come at the expense of lower growth. We close however, with caveats; we provide evidence relevant to the WW hypothesis, not a comprehensive analysis of the merits of balanced-budget and other fiscal restrictions. In particular, the context for fiscal policy differs in obvious and important ways for countries and sub-national states. Auerbach (2007) for example, analyzes federal fiscal policy ‘rules’ and issues for recent decades.

### States CP---AT: Repeal BBAs---Bond Prices

#### Bond prices will skyrocket in response to BBA repeal.

Robert C. Lowry & James E. Alt 1, Professor in the Political Science Program of the School of Economic, Political and Policy Sciences at UT Dallas, “A Visible Hand? Bond Markets, Political Parties, Balanced Budget Laws, and State Government Debt,” Economics and Politics, 03/2001, vol. 13, no. 1, pp. 49–72

Building on earlier research, we have shown how balanced budget laws that limit the ability to carry deficits forward, which we refer to as NOCA laws, can be effective. In part they are effective because the operation of bond markets gives politicians an incentive to maintain orderly fiscal policies; namely, lower operating costs of government (and thus more funds to spend on other things) in those cases where unforeseen economic circumstances compel running a deficit in the short term. If politicians do run consecutive deficits, however, then it is highly likely that they are not conforming to the strict standard set forth in the NOCA law, and markets react accordingly. Thus, to keep the discount intact, political officials must adopt fiscally sound practices. The effects of NOCA laws are distinct from the budget transparency that Alesina and Perotti (1996, 1999) say can result from rules on how the budget is to be prepared, organized, and executed, or the creation of a "watchdog" agency that verifies the accuracy of the estimates used and discourages creative accounting practices. In a sense, NOCA laws may be thought of as substitutes for procedures designed to increase transparency because they improve the ability of outside observers to interpret noisy signals rather than trying to remove the noise from the signals. They accomplish this by creating clear expectations about the preferred policy in certain circumstances, namely, after deficits. These expectations then allow observers to infer whether the government is following the clearly defined, preferred policy or is being opportunistic. Our results for partisan control are more mixed. We find that investors apparently take into account information about the behavior of high-demand parties, although the results for states that lack both a NOCA law and a unified Democratic government are anomalous. We do not find evidence that investors take into account the persistent effects of coordination problems in split legislature governments, although here the number of cases is quite small. In a positive sense, then, institutions matter to fiscal policy, and well-designed institutions can create incentives for sound policy. Normatively, the institutions we describe can be welfare improving, in that both investors and politicians (and maybe eventually the voters who support them) can be better off in a situation where laws create the right political incentives. Of course, there is the other side, that compliance with a NOCA law increases the adjustment costs of maintaining fiscal solvency. In general, from the standpoint of constituents, NOCA laws make sense when lower borrowing costs due to investors' ability to distinguish between systematic and stochastic causes of deficits outweigh expected adjustment costs from tax increases and budget cuts needed to offset a deficit that may have been caused by stochastic factors. We have no way to quantify these adjustment costs. The fact that many of the laws we analyze were adopted in the nineteenth century as part of the state constitution (Poterba, 1996) suggests that they do not necessarily reflect the optimal balance from the standpoint of today's median voter.35 Nevertheless, our empirical results show that the savings in borrowing costs are real, in that the interest rate paid on general obligation bonds is systematically lower in states with balanced budget laws, as is the market reaction to a short-term deficit.

### States CP---AT: Reserve Banks

#### State reserve banks are preempted.

Andy Peters 12, writes about regional banks, consumer finance and debt collections for American Banker, co-writes the Morning Scan column, has previously written for Bloomberg and for the Daily Report, a legal newspaper in Atlanta, got his start in journalism as an editorial intern for The New York Times, “States Mull Bills to Set Up Their Own Banks,” American Banker, 03/06/2012, vol. 177, no. 35, pp. 1–5

Giving states the power to guarantee loans could complicate existing regulation, says Kevin Jacques, a finance professor at Baldwin-Wallace College. "You've got state-chartered banks, and federally chartered banks, and also state and federal regulators," says Jacques, a former Treasury Department economist. "That combination of state banks with state and federal regulators causes a lot of preemption-related issues. This would make it even worse."

#### AND, even if not, initial capitalization would trigger the advantage by crowding out general obligation debt.

Andy Peters 12, writes about regional banks, consumer finance and debt collections for American Banker, co-writes the Morning Scan column, has previously written for Bloomberg and for the Daily Report, a legal newspaper in Atlanta, got his start in journalism as an editorial intern for The New York Times, “States Mull Bills to Set Up Their Own Banks,” American Banker, 03/06/2012, vol. 177, no. 35, pp. 1–5

The California Bankers Association opposed last year's legislation, saying that the cash-strapped state could not afford the losses that would accompany the formation of a bank, said spokeswoman Beth Mills. A state-owned bank would also compete with other banks for a limited supply of borrowers. The California Bankers Association has not yet taken a position on the bill introduced this year. The assertion by state bank supporters that the banking industry doesn't want to lend is "ludicrous," says Frank Sorrentino, the chief executive of North Jersey Community Bank in Englewood Cliffs, N.J. "With the Federal Reserve keeping risk-free government securities at all-time-low interest rates and the federal funds rates at 0%, banks have nowhere to put their money," he says. "They have to lend to make money." Recent data suggests that banks are lending again. Total loans at Dec. 31 grew 1.8% from Sept. 30, to $7.46 trillion, the Federal Deposit Insurance Corp. said last month. Commercial and industrial loans grew 4.9% in the fourth quarter, accounting for about half of the total loan increase. The FDIC said in a report issued last week that the quarterly increase was the "largest real growth" in loans in four years. Banks might be making more loans to larger companies, but they're making it more difficult for small businesses to obtain a loan, Brown says. "People used to be able to get a credit line from their bank at 8%, but now they have to get a credit card at 16%," says Brown, a former lawyer in Newhall, Calif., who wrote a book, "Web of Debt," about the Fed. Even if banks say they've increased small-business lending, evidence suggests it's far less than what they are capable of providing, Brown says. "Whatever the too-big-to-fail banks are doing, they could be doing much more if they had the help of a public bank," she says. The model for the Public Banking Institute is the Bank of North Dakota, the only state-owned bank. The bank, formed in 1919, helps other banks with liquidity requirements, which allows those banks to offer cheaper credit, Brown says. Further, the bank guarantees those loans. All North Dakota agencies must deposit their funds in the Bank of North Dakota. Those funds are used for economic development, to provide capital to community banks, and to fund student loans. Government-backed loans are not new. Privately owned banks often obtain federal guarantees through the U.S. Small Business Administration. Certified lenders made $30.5 billion of SBA-backed loans in the fiscal year that ended Sept. 30, or the highest volume in the SBA's 58-year history. SBA loans have a government guarantee but they also represent a fraction of small-business loans. Many banking observers are not convinced that state-owned banks are a good idea. Some question whether the Bank of North Dakota has played a significant role in the state's economy. North Dakota's economy has been no more stable than the economy of South Dakota, which also relies on agricultural commodity prices. South Dakota does not have a state-owned bank. The cost of forming a state-owned bank could be substantial. If a large state such a Massachusetts formed a bank, it would require funds equal to 20% of the state's general obligation debt, according to the Federal Reserve Bank of Boston.

#### BUT, even successful borrowing just delays the impact---they’d default, FG won’t bail out BUT if it does that triggers the NB.

John Hood 11, resident of the John Locke Foundation, a state-policy think tank based in North Carolina, and the author of Investor Politics, “The States in Crisis,” Winter, https://www.nationalaffairs.com/publications/detail/the-states-in-crisis

Over the past three years, the news out of state capitals has been dire. From Albany to Sacramento, economic shocks have reduced states' tax revenues, even as the downturn has required states to spend more on welfare for the struggling and newly jobless. The Great Recession has thus torn gaping holes in state budgets — holes that governors and state legislatures are now desperately trying to close. That effort has been painful for state officials. When Arizona cut state funding for kindergartens, educators and parents cried foul. When New York raised tuition at its state universities, students protested. When California, North Carolina, Oregon, and Connecticut raised their income taxes, angry taxpayers flocked to Tea Party protests and expressed their displeasure through buzzing phone lines and clogged inboxes. With every attempt to fix state budgets, an acceptable solution has seemed ever more out of reach. But alarming as these recent developments have been, the states' fiscal calamity is not simply a function of the recession. Their shaky financial foundations were in fact set long ago — through unsustainable obligations like retirement benefits for public employees, excessive borrowing, and deferred maintenance of public buildings and infrastructure. The result has been a long-building budget imbalance now estimated in the trillions of dollars. The nightmare that governors and state legislators are living through will therefore not end when the effects of the recession do. Even as state officials address large short-term operating deficits, they must confront the more troublesome structural gaps between current state revenue projections and massive future liabilities. And the tools that these state officials have at their disposal to deal with the crisis are limited. Many state constitutions require the repayment of bonds to take priority over almost all other state spending. Others require state-employee pensions to be paid out at the promised terms no matter what, making it almost impossible to negotiate those liabilities down. States, unlike municipalities, do not have the legal option of declaring bankruptcy. At some point, if some states approach default, just meeting these debt obligations will consume all of their revenues — leaving no money for basic functions like maintaining a state police force, operating roads and other transit infrastructure, or educating children. If these states fail to find their way out of their current predicament, their only option may be to beg for federal bailouts. And the states would not be the only losers if this comes to pass. If the federal government were to refuse a bailout request, it would risk a disastrous crisis in the bond markets — as investors who had always assumed state debt to be safe (in part because they assumed it would have federal backing in a crisis) would suddenly rethink all their state-bond investments. On the other hand, if the federal government were to grant a bailout to any one state, the other 49 would certainly expect assistance as well. This would put our federalist system to an unprecedented test. It would also require an enormous amount of money from federal coffers that are themselves perilously hollow.

#### AND, funneling investment through state banks tanks growth in the meantime

Mark A. Calabria 13, Mark A. Calabria, a former senior aide to the Senate Committee on Banking, Housing and Urban Development, is the director of financial regulation studies at the Cato Institute., 10-1-2013, "Public Banking Hurts Economic," NYT, https://www.nytimes.com/roomfordebate/2013/10/01/should-states-operate-public-banks/public-banking-hurts-economic

After the financial crisis, it is natural to look for alternatives to our current system. We’d be irresponsible if we didn’t. And although it may sound like an attractive alternative, direct government ownership would actually be worse than our currently flawed system. Before we turn to theoretical concerns, we can look at concrete ones: what actually happens when the government owns banks. The most comprehensive study finds “that higher government ownership of banks is associated with slower subsequent development of the financial system, lower economic growth, and, in particular, lower growth of productivity.” Keep in mind that productivity is ultimately what drives wage growth. This research has been extended in a recent paper that attributes much of the worse outcomes to political interference in bank lending decisions. When the government owns the banks, lending decisions become increasingly driven by politics, rather than economics. Resources flow to those with influence. Government-owned banks also tend to under-price risk in order to buy votes. If there is one lesson we should take away from the recent crisis, it is that when you intentionally under-price risk, bad things happen. Some might point to the Bank of North Dakota, currently the only state-run and state-owned American bank. Of course that ignores that in the 1800s there were a number of state-owned U.S. banks. They all failed miserably, and at great expense to the taxpayer. They were also magnets for corruption. But that’s history. Currently the Bank of North Dakota is generally a well-run institution. It is also a massive subsidy to the fossil fuel industry. One need only look at its annual reports to see that the bulk of its below-market lending has been to the fossil fuel industry. It’s a case in point, illustrating that government-owned banks will tend to subsidize the powerful.

### States CP---AT: Reserve Banks---Capture

#### Empirics---the CP will cause economic collapse through misallocation of resources.

William Gamble 10, founder of EMERGING MARKET STRATEGIES, 8-23-2010, "How Did State Owned Banks Get Into This Mess?," Seeking Alpha, https://seekingalpha.com/article/221778-how-did-state-owned-banks-get-into-this-mess

Fannie Mae (OTCQB:FNMA) and Freddie Mac (OTCQB:FMCC) are United States government-sponsored mortgage firms. Often seen as the originators of the subprime mortgage crisis in the US, these two quasi governmental organizations need more money. They have requested an additional $1.8 billion from the US government, which brings the total to $148.3 billion since the financial crisis began. How did a staid, quiet, boring government related financial institution get into this mess? The answer is simple. Government banks simply don’t work. The economic purpose of banks in a market economy is to help investors or depositors allocate capital to the most efficient and profitable enterprises. In a recession, their job is to eliminate as quickly as possible inefficient or failed businesses for the least amount of loss. State owned banks and other state financial institutions simply cannot do this. It is bad enough that politicians allow public funds to follow political power. It is far worse that politicians force banks to allocate depositor money to the politically connected rather than the financially successful. The problem is not just in the US. It is everywhere. There is hardly a country where a state owned bank either has or will create a financial crisis. It is not a question of culture or the ability of a legal system to regulate the financial industry. Politicians are the legal system. They make the laws. They create the regulations. They control the regulators. If they want public or depositors' money to go to a particular segment of the economy, it goes to that segment regardless of its economic potential. Fannie and Freddie were able to bend the rules because of their close relationship with Congress. The extent of their interrelationships was exposed as far back as 2007 when they were fined a record $3.8 million for using corporate resources to support the campaigns of 85 members of Congress. The fine did not even slow their path to ruin and political clout insured no supervision.

#### Slovenia proves it would be captured---similar governance structure.

Pierre Beynet 13, Pierre Beynet is the head of the country studies division at the Economics Department of the Organization for Economic Cooperation and Development., 10-1-2013, "Lessons From Slovenia's Public Banking Crisis," No Publication, https://www.nytimes.com/roomfordebate/2013/10/01/should-states-operate-public-banks/lessons-from-slovenias-public-banking-crisis

The lawmakers who want U.S. states to start banks should take a moment to read up on Slovenia. It may seem odd to look for applicable lessons in a small European country of 2 million people with a communist past. But the major difficulties facing Slovenian banks originate from standard governance problems, the kind of problems that could emerge in the U.S. as well. In theory, public or private ownership should not matter in terms of governance. The public shareholder would restrict its role to providing clear medium-term objectives to the management without interfering in the daily conduct of business, while guaranteeing a level playing field with potential competitors to avoid market distortions. In practice, though, public shareholders tend to be subject to political pressure. The head of the largest Slovenian bank resigned in 2009 after only three months in office, citing political interference. His successor did the same a year later, also mentioning political pressure. Also, many of the clients of Slovenian banks were state-owned firms, which suffered from their own governance problems. Does it mean that U.S. states should refrain from creating state-owned banks? Not necessarily. Some countries have created public banks to support sectors facing difficult access to market financing, for example small enterprises or start-ups. Development banks are quite common, and Slovenia has such a bank, the Slovenian Export and Development Bank. It can play a useful role in supporting small and midsize enterprises or infrastructure or export financing, and has not had major financial difficulties. But the Slovenian experience shows that strong governance is fundamental. Otherwise, the deterioration in banks’ assets can become an unacceptable risk for taxpayers. Options to reduce such risks could be to limit the objectives of state-owned banks to address well-defined and widely accepted market deficiencies, to avoid political interference and to insist on private co-financing to limit potential credit misallocation. O.E.C.D. guidelines on corporate governance of state-owned enterprises could also be a useful tool to help U.S. states that consider entering the banking business.

### States CP---AT: Reserve Banks---Default

#### Would collapse

Matthew Glans 13, M.A. in Political Studies from the University of Illinois, Senior Policy Analyst at Heartland, \*\*Citing Hester Peirce, a Senior Research Fellow at the Mercatus Center at George Mason University \*\*\*Citing Mark A. Calabria, Ph.D. in Economics from George Mason University 10-14-2013, "Research & Commentary: State-Owned Banks" Heartland Institute, https://www.heartland.org/publications-resources/publications/research--commentary-state-owned-banks

Unlike private banks, BND is not insured by the Federal Deposit Insurance Corporation; the deposits it holds are guaranteed only by “the full faith and credit of the state of North Dakota.” If any loans default, a state-run bank has no FDIC backing, and taxpayers could face substantial liabilities and tax hikes. Supporters of the BND model claim a state-run bank would provide additional loans to small businesses and other consumers that private banks are not currently making. Many proponents also contend state-run banks would support the banking industry as a whole by lending to other local banks and creating competition for the large national banks that dominate the market. Finally, they say the bank would provide new revenue for the state through its dividends. Hester Peirce, a senior research fellow at the Mercatus Center at George Mason University, argues in the New York Times that the creation of a state-run bank might only distort the banking market. Peirce argues this risk is amplified by the fact that state-run banks could face considerable pressure to make loans that private banks have good reason to reject, thus increasing the risk of default. Peirce recommends eliminating the existing laws that favor big banks and ending regulatory barriers in capital and lending requirements that hurt small banks. Also writing in the New York Times, Mark Calabria of the Cato Institute notes many of the problems that plague the political system in general are likely to affect a state-run bank: “When the government owns the banks, lending decisions become increasingly driven by politics, rather than economics. Resources flow to those with influence. Government-owned banks also tend to under-price risk in order to buy votes.”

#### Mississippi proves state banks just default

Paul Studenski & Herman Edward Krooss 3, Studenski taught economics at NYU and was Director of the Albany Graduate Program in Public Administration; Krooss is an economist, Financial History of the United States, 02/2003, Beard Books

State-owned Banks. In the last years of prosperity the withdrawal of the Federal government from banking caused many states to venture upon bank ownership. These experiments, like free banking, met with mixed success. The State Bank of Indiana, founded in 1834, was successful, for its management was efficient and conservative. The state owned outright half of the parent bank's capital and made loans to subscribers to the bank's stock. Commercial loans were made only after most careful consideration and were in small amounts and highly diversified. In spite of its success, the bank, with its 17 branches, was not popular. As a monopoly, it was vulnerable to attack and was forced to wind up its affairs in 1855. The experience in Mississippi with a state-owned bank was altogether different. In 1838 after the branch of the United States Bank in Mississippi was closed, the state chartered the Union Bank with a capital of $15 million, $5 million of which was subscribed by the state through the sale of bonds. About two-thirds of the bank’s loans were made on overinflated real estate and could not be liquidated quickly during the succeeding money stringency. The bank failed, and the state of Mississippi repudiated the bonds which had been floated to start the bank.

### States CP---AT: State Currencies

#### Establishing alternative currencies can’t bridge the gap to degrowth.

Mark H. Burton & Mike Riddell 18, Burton wrote In Place of Growth, and much of The Viable Economy (2014), The Viable Economy … and Society (2020) and Policies for the City Region (2017) and edited the collection of works by SSM, A Viable Future (2021), psychologist and subsequently a senior manager in health and social care services, now staff at Steady State Manchester, “The Viable Economy – and Viable Finance,” Steady State Manchester, 12/13/18, https://steadystatemanchester.net/2018/05/01/the-viable-economy-and-viable-finance/

Discussion

Community currencies and near currencies are probably the best researched of these areas in terms of their contribution to transition to what we’d recognise as the Viable Economy10. From his review of LETS, Timebanking and convertible local currencies as tools for the degrowth transition, Dittmer11 concludes,

“… there are no clear success stories of local currencies as drivers of degrowth. LETS can facilitate informal resale, repair, and sharing of commercially produced goods, but their burdensome management and confinement to small memberships, dictated by their reliance on informal social pressure, limit their usefulness in this regard. LETS have also been found to support alternative livelihoods, but under quite uncommon conditions. Time banks help people expand their social networks, and are better than LETS at reaching the socially excluded. However, they are confined to unskilled personal services, bureaucratic, and dependent on grant funding. …. Convertible local currencies (CLCs) are best at attracting local businesses, but no significant evidence of their said capacity to localize supply chains has surfaced as yet, and their business-friendly design works to the detriment of other criteria. The Wörgl experiment [in 1930s Austria] suggests that a council-tax-endorsed CLC aimed at eco-localization may require the local state to increase geographical discrimination in public procurement, shifting the actual locus of change from the local business-oriented currency system to the broader struggle for sustainable public procurement.

Morever, a recent article (Marshall and O’Neill, 2018) gives some support to this view: a study of the Bristol Pound as a tool for eco-localisation concluded it had little impact in terms of localising supply chains. However, this was no more than a limited exploratory study with a small sample of participating businesses. My (MHB) understanding (from talking with participants) of the Brixton Pound, which can also be used to pay council fees and taxes, is that it is a good propaganda tool for raising awareness of the local economy, and seems to help increase the sense of collective place-based identity, but it has limited economic impact as an exchange medium.

Dittmer goes on:

In sum, local currencies do not appear to have more than a marginal role in driving purposive degrowth. …. In the context of fossil fuel scarcities, the pursuit of alternative livelihoods supported by part-time employment is a frail political strategy. Eco-localization by means of friction in monetary space is an inferior option to a tax on transport fuels.12

Institutional relations: a case study from Brazil.

It is probably wrong to look at any of the above types of financial innovation in isolation from their potential institutional context. To illustrate, it is worth considering one of the more successful complementary currencies, the Palma, in the context of its parent organisation, the Banco Palmas13. Conjunto Palmeiras is a favela (usually translated as “shanty town” – at any rate a marginal settlement) in the city of Fortaleza in Ceará state, North East Brazil. The settlement was established after its people were expelled from another area 45 years ago and their history of mutual support in struggle is a key ingredient of their model and its success. A second wave of displacement was a result of the gentrification of parts of the favela, a consequence of the expansion of the city. People were asking, through a series of discussions, debates, assemblies, focus groups and conversation, “why are we poor” and concluded that, part and parcel of the economic exclusion and exploitation of the population was firstly the unequal distribution of the aggregate income of the favela, and secondly that only 20 percent of the money coming into the area circulated within the community – the other 80 per cent was spent on purchases outside the favela.

“We discovered one of the main factors of the impoverishment of the territory, the lack of local consumption caused the loss of our savings and, consequently, of our capacity to generate income and work. Without such savings it becomes impossible to create a strong market under the control of the community and makes us dependent on a system that sees us only as a cheap source of labour.”14

The Banco Palmas community bank was set up in 1998, setting up a model of development in the area via local production and consumption. A number of different financial services were established to establish a network of producers and consumers in the neighbourhood, with the aim of promoting an “economic citizenship” with the potential of generating prosperity at the local level under the conrol of the inhabitants of the area. These services include, the “social currency” the Palma, circulating in the area (for years this was paper-based but now is also in digital form), but also credit in national currency (the Real) for producers and interest-free credit in Palmas for consumers. The bank also became a “corresponding bank” with mainstream banks, making banking services available to those in the favela: like many areas of the UK, Brazil’s favelas have lacked access to basic financial services15.

Initially the National Bank opposed the development with a legal challenge, but the Banco Palmas won the case in 2003. After this (and with the installation of the Workers’ Party in power in Brazil), support from beyond Fortaleza, notably from the National Secretary of the Solidarity Economy in the Ministry of Labour, made possible a network of community banks in Brazil on the Banco Palmas model. One consequence has been the establishment of a “certain dependency” on the constraining rules of the commercial banks, “antagonistic and incompatible with the system of financial solidarity of the community banks that promote different financial services, strengthened by local power and guaranteeing an investment in the capacity of the most poor.”

Following an initial (very) small grant from an NGO, the bank’s operations are funded by a) interest from microcredit loans (up to 3.5% monthly but also as low as 1% depending on size of and purpose of loan) b) fees from the corresponding bank (i.e. Banco Palmas acts as local agent for regional bank to widen access to banking services), and c) commission for changing Palmas to Reais16.

The scale of operations is significant:

According to the Banco Palmas (2010), in the previous three years (2007-9), the Instituto Palmas realised 3,139 credit agreements, with a volume of landing of 4,126,712 Reais (approx US$ 2,947,651). 2,500 families benefited, there having been 8,000 jobs maintained and 2,000 generated. Corresponding banking realised 28 million transactions and managed approximately 80 Million Reais17.

The Banco Palmas is clearly a model of success, and this seems to be due to its combination of multiple services (rather than just a community currency) with a strong local institutional base and partnership with other institutions in the city, region and country.

The complementary currency itself has declined in importance over the period while levels of overall consumption of goods and services have increased (although it is unclear whether the recent digitisation is to change this) A detailed study18 of the usage and circulation of the Palma found that around half of its usage was accounted for by just 6 economic actors in addition to the Banco Palmas itself: four local stores selling basic consumer items, the neighbourhood petrol station, and a party and décor shop. Previously two sweet shops had also been important in the circulation but no longer accepted the Palma. Only an estimated 13,457 Palmas were in circulation (compare this to the figures above, bearing in mind that the Palma and Real are 1:1 convertible).

One factor was that there was, at the time of the study, greater prosperity, in part due to the anti-poverty governmental policies and benefits, so less need for the consumer credit offered by the Palma. The bank had also stopped paying part of the salaries of its workers in Palmas. What the study found, however, was that the minority of people that used the Palma did so, not for primarily economic reasons but because of its symbolic and political meaning.

“…there is a sensitive symbolic and political role played by the use of currency in the territory, but not translated in terms of volume and frequency of use. For these actors, it is enough to know that the currency exists, which was created by them and that can be accessed when needed.”19

The ensuing minimal but persistent use of the Palma appears to be also a kind of “vote of confidence” in both the favela and the role of Banco Palmas in securing better economic conditions.

Conclusion: no easy answers.

It is not easy to transform an economy, locally or nationally so we should beware of supposed magic solutions.

Community financial institutions such as community banks, could have an important part to play in helping us move towards a regional Viable Economy, but they won’t on their own get us there. Critically, as part and parcel of the capitalist system (albeit a more benign capitalist sub-system) they do not have any kind of automatic bias towards radical/eco-localisation, to reduction of economic material flows, or to the construction of social justice at scale.

Community currencies and near currencies can act as helpful propaganda aids in increasing awareness and loyalty to the local economy but it seems they generally do little more, except in exceptional circumstances where they could provide a safety net as mainstream systems collapse or fail to deliver, as in the examples of pre Workers party and commodities boom Brazilian favelas and post-dollarisation crisis Argentina.

Instead we need serious analysis of how the different elements of a transition to a Viable Economy could work together, supporting one another, correcting systemic gaps, and achieving scale, while discriminating against globalised capital and unsustainable levels of material and energy use. That also implies using a variety of economic, social and political frameworks for understanding, underpinned by a sound ecological economic understanding. If you can help with that, do get in touch.

### States CP---AT: Taxes

#### State taxes are cannibalized---doesn’t raise revenue.

David Gamage & Darien Shanske 17, David Gamage, Professor, Indiana University Maurer School of Law – Bloomington, and Darien Shanske, Professor, UC Davis School of Law, “Article: Tax Cannibalization And Fiscal Federalism In The United States,” Northwestern University Law Review, 111 Nw. U.L. Rev. 295, 2017

In theory, the tax cannibalization problem may occur whenever state governments and the federal government levy taxes on overlapping tax bases. We demonstrate that the tax cannibalization problem currently does occur with respect to state-level taxes on corporate income and capital gains, and possibly also ordinary income. n9 Specifically, we show that state governments' current top tax rates on these bases impose large, wasteful costs through tax cannibalization. [\*299] Extrapolating from the existing empirical literature, we develop a model showing that a typical state's top corporate income and capital gains tax rates generate surprisingly large economic waste. n10 We propose federal-level reforms that could eliminate much of this economic waste while still maintaining the current levels for state governments' revenues and distribution. Through enacting these reforms, the federal government could produce a "win, win, win" for the federal government, state governments, and taxpayers. Let us now briefly elaborate the nature of the tax cannibalization problem with an example of state-level corporate income taxes. State-level corporate income taxes are currently vulnerable to a variety of distortionary responses that shrink the states' corporate income tax bases. These distortionary responses include various forms of tax avoidance and tax gaming. It is useful to divide these distortionary responses into two conceptual categories. The first conceptual category consists of distortionary responses that involve taxable activity relocating to other states. We label this category as "horizontal distortions." Because horizontal distortions involve taxable activity relocating across state lines, but remaining within the United States, horizontal distortions do not necessarily shrink the federal government's corporate income tax base. Important examples of horizontal distortionary responses to state-level corporate income tax rates include corporate taxpayers shifting their physical presence and sales activities from states that levy higher corporate income tax rates to states that levy lower corporate income tax rates. n11 The second conceptual category consists of the remaining distortionary responses that do not involve taxable activity relocating to other states. We label this category as "vertical distortions." In contrast to horizontal distortions, vertical distortions do typically shrink the federal government's corporate income tax base. Important examples of vertical distortionary responses to state-level corporate income tax rates include corporate taxpayers shifting real investment activities abroad, corporate taxpayers shifting reported profits to subsidiaries in foreign jurisdictions, corporate taxpayers shifting from equity financing to debt financing, and [\*300] business taxpayers shifting from the use of corporate forms to partnership forms. n12 Vertical distortionary responses are the primary source of the tax cannibalization problem. Because vertical distortionary responses shrink both the state government's corporate income tax base and the federal government's corporate income tax base, vertical distortionary responses to state-level corporate income tax rates deprive the federal government of tax revenue. Moreover, the federal government levies much higher tax rates on the bases of corporate income, ordinary income, and capital gains, than do any state governments. Consequently, the federal government suffers much greater harm from vertical distortionary responses to state-level tax rates on these bases than do the state governments setting these tax rates. When vertical distortionary responses to a state government's tax rate deprive both the federal government and other states' governments of revenue, in the aggregate, we refer to this as "tax cannibalization." Throughout the remainder of this Article, we explain how tax cannibalization currently biases state governments' tax policy decisions and thereby results in large-scale economic waste. Indeed, we approximate that - because of tax cannibalization - the top corporate income and capital gains tax rates in some states currently exceed their national revenue-maximizing levels. In other words, reducing these tax rates could actually increase the overall tax revenues raised (in the aggregate) by the acting state government, the federal government, and other state governments. There are at least three reasons why the tax cannibalization problem is especially severe in the context of fiscal federalism in the United States. n13 First, state governments mostly piggyback on the federal government's tax-base-definition rules for corporate and personal income taxes. Second, the federal government currently levies tax rates on these bases that are amongst the highest in the world. Third, under the federal government's current tax-base-definition rules, the corporate income and capital gains tax bases are rather vulnerable to tax avoidance and tax gaming responses. The combination of these three factors results in state-level tax rates on corporate income and capital gains generating very large tax cannibalization.

#### Tax increases are insufficient – they can’t cover the massive scale of state budget crises

Michael Powell 11, NY Times, “Higher Taxes Wouldn’t End Some Deficits,” New York Times, January 19th, http://www.nytimes.com/2011/01/20/business/economy/20tax.html?mtrref=www.google.com

Set aside for a moment the ever-charged argument about whether income tax increases spook the wealthy and consider this question: What would an increase in the personal income tax of a size similar to that of Illinois do for other fiscally troubled states? The New York Times examined this question in three embattled places, New York, California and New Jersey. In New York, an increase of two percentage points in the state income tax could raise about $9 billion and perhaps tip the state into surplus. In California, a similar action could raise more than $13 billion, which would cover just a portion of that state’s yawning $25 billion deficit. In New Jersey, a jump of two percentage points in each of its income brackets could raise nearly $5 billion, which would probably leave the state with a $4 billion to $7 billion deficit. Under these assumptions, a household with the median income would pay at least $1,000 more a year in each of these states; a family making $200,000 would pay $4,000 more. That an income tax increase of such a size could not close budget gaps in California and New Jersey underlines the vast challenge confronting these states. In California, Mr. Brown has proposed a deep, billion-dollar cut in higher education and $4 billion worth of cuts in services for the poor and unemployed. Even a substantial increase in its state income tax — already much higher than in Illinois — would only soften the harshest blows. In Illinois, too, the income tax increase will not cover all the accumulated ills, from a multibillion-dollar deficit to a backlog of unpaid bills to its huge pension problems. For other states, though, such a tax increase would go much further in addressing at least the short-term problems. In Arizona, for instance, legislators during the last 17 years repeatedly cut income taxes, opening an annual hole of nearly $2 billion. That sum, according to Mark Muro, a senior fellow at the Brookings Institution, approximates the size of the state’s annual deficit without taking into account the recession-driven drop in revenue. Matthew N. Murray, a professor at the University of Tennessee, Knoxville, who has studied state fiscal problems for the Brookings Institution, said: “In Illinois, the stark reality of the cataclysmic nature of their budget reality drove this income tax increase. But we’re going to see more states raising taxes over the course of the next few years largely because there’s only so much cutting you can do.

#### Higher state taxes erode the tax base and undermine revenue-raising

John Avlon 13, managing director of Daily Beast, “Jerry Brown Creates California Surplus Miracle, But Can It Last?” Daily Beast, January 15th, https://www.thedailybeast.com/jerry-brown-creates-california-surplus-miracle-but-can-it-last

Brown’s budget does begin to pay down the debt, but the outstanding amount dwarfs the pay-down. Of course, that hasn’t stopped liberal activists from demanding more money be spent immediately on social services, under the banner of “investment.” Moreover, there are real questions about whether the increased tax burden—especially on the wealthy—will end up eroding the state’s tax base in the near future. “There’s some doubt that high income taxpayers won’t either move to Nevada—or some other low or no-income tax state—or find other ways, such as delaying realization of cap gains, to avoid hefty new surtaxes—especially since their federal taxes are also increasing,” emails the Sacramento Bee’s Dan Walters. “California’s marginal income tax rate (federal plus state) is now highest in U.S. at highest level, about 52 percent.” But Walters acknowledges that Brown’s budget miracle is more or less legitimate, at least for now. “It’s mostly new revenue from sales and income tax hike approved by voters in November with a dash of economic recovery and a smidgen of creative bookkeeping such as slowing down some debt repayment and assuming renewal of a tax on health care providers to trigger some federal aid,” Walters’ continues. “But overall it’s mostly the new taxes.” Other Golden State observers take an even more skeptical view. “There is a reason Gov. Brown is known as Governor Moonbeam,” says KABC’s center-right John Phillips. “Structural deficits are everywhere, the nonpartisan Legislative Analyst’s Office says there’s still a $1.9 billion budget deficit, and rich people can’t cross the state line fast enough—taking revenues down almost 11 percent since the passage of his Prop 30 tax hikes with them. On the plus side, hey, we’re not Detroit!”

### States CP---Debt Servicing

#### You can’t raise money with municipal bonds if the economy is degrowing.

Joshua Farley 13, University of Vermont, “Monetary and fiscal policies for a finite planet,” Ecological Economics and Institutional Dynamics, 10th International Conference of the European Society for Ecological Economics, pp 77–78

There are two primary sources of money creation in the modern economy. The first is known as vertical money. Modern monetary systems are based on fiat currencies, which are created when governments spend them into existence. Fiat currencies are backed by the productive capacity of whoever accepts them, and all citizens must accept these currencies for the goods and services they produce in order to pay taxes. Vertical money is destroyed when government revenues exceed new government expenditures.

The second, which makes up the vast majority of money in circulation, is known as horizontal money. One theory of horizontal money creation is that recipients of vertical money deposit it in banks for safekeeping. Governments stipulate that a fraction of this can be loaned out, but those loans are then deposited again in banks, enabling more loans. If banks must hold a 5% reserve, they can lend out nineteen times as much as the vertical money that was deposited. A second theory is that banks simply loan money into existence and that money is then deposited back into banks. In other words, loans precede deposits. In either case, the loans create horizontal money, which is destroyed when the loans are repaid.

Most loans are issued to businesses that use the money to pay households for factors of production. Households use their income to purchase goods and services produced by firms. Firms however seek to earn a profit and must pay back loans with interest, which means that firms demand more money from households than they initially paid to them. Profits and interest payments are only possible if the banks continually issue new loans in excess of repayments, which will only happen in a growing economy, or if the government continually issues new vertical money, which generally stimulates economic growth. Furthermore, horizontal money is pro-cyclical. Banks are willing to lend out more money when the economy is growing and they are confident of repayment. Banks cease to make new loans when the economy is contracting, which reduces the money supply and forces debtors into default, initiating a recessionary spiral that generates unemployment, poverty and misery, which is what the public therefore associates with degrowth. As a result of this dynamic, banks can make any loan they believe will be profitable, regardless of reserve requirements. The Central Bank is forced to loan them money to bring bank reserves to the required level, or risk inadequate money supply to meet existing debt obligations, resulting in economic collapse. The horizontal money system must collapse in the absence of growth.

Degrowth is therefore incompatible with the debt-based, interest bearing creation of money. The solution is for governments to increase reserve requirements to 100%, which can be done gradually or all to once. The role of banks would be to serve as intermediaries between savers and borrowers. Savers lose access to their deposits while they are loaned out, and fully accept the risk of non-payment, which eliminates any systemic risk from loan defaults. Banks would also safeguard money in checking accounts for a fee.

100% fractional reserves would destroy the bulk of a nation's money supply. In order to avoid an uncontrollable recessionary spiral, the government would be required to replace horizontal money with vertical money. There are a number of ways to create vertical money. Some authors have proposed issuing money directly to citizens to pay off their outstanding debt, or opening time deposits in banks equivalent to outstanding loans, thus backing all outstanding bank loans with vertical money. Degrowth at the scale necessary for a sustainable economy however requires major investments in public goods ranging from ecological restoration to open source green technologies, and also expenditures directly targeted toward alleviating the unemployment, poverty and misery currently associated with degrowth. Horizontal money is not invested in such activities because they do not generate the profits required to pay back the loan. Debt free government investment in these activities in contrast increases the money supply without increasing the demand for interest payments or profits, thus facilitating repayment of existing debt.

Vertical money creation could be decentralized by requiring the central bank to purchase interest free state and municipal bonds to finance expenditures at the local level. The money thus created would be destroyed when state and local taxes are levied to redeem the bonds. A degrowth economy will likely require a decreasing money supply, which turn will require government revenue in excess of spending. Sources of revenue should include green taxes and government auctions of environmental allowances to manage throughput, highly progressive taxes to reduce inequality, and confiscatory taxes on rent (unearned income) to eliminate the incentives for speculation and to ensure a more just distribution of wealth, income and resources. Only by replacing interest bearing, debt-based horizontal money with debt-free vertical money will society be able to eliminate the need for growth, and achieve the controlled contraction required to bring the economy in line with planetary boundaries.

### States CP---Yields

#### The federal government is the best both at borrowing and at taxing

Mary Schulz & Sarah Klammer 22, Schulz is Associate Director, MSUE Center for Local Government Finance and Policy; Klammer is Specialist, MSUE Center for Local Government Finance and Policy, “Federal Revenue Sharing: A Standing Counter-Cyclical Fiscal Policy Mechanism for State and Local Aid,” Michigan State University, August 2022

While bipartisan acknowledgment of the growing budget deficit and public debt is clear, agreement as to its purpose is much more tenuous. Modern Monetary Theory (MMT) economists argue that the national debt is an important economic tool, as exemplified by the market for U.S. Treasury Securities. It would be economically disadvantageous to wipe out the wealth of the holders of these financial assets by running sustained fiscal surpluses (Kelton, 2020).6The elimination of U.S. Treasury securities would also eliminate a way the Federal Reserve conducts monetary policy through the sale of U.S. Treasuries, which in turn could increase interest rates.

Lack of funding is one of the first arguments used to shut down policy proposals. This was true as well in the case of the 1972 General Revenue Sharing program, and continues to be true of Federal aid to states and local governments today. In the process of approving the ARPA State and Local Fiscal Relief Funds, some members of Congress tried to claw back about $7 billion from 30 states to help pay for other emergency COVID-19 spending (Murakami, 2022a). And just one and one-half years into the 5-year SLFRF program, some members are raising questions about affordability, citing concern for the types of spending projects into which governments are considering investing funds (Murakami, 2022b).

It is easier for the federal government to raise tax revenues than for either states or local governments because the federal level has the broadest base from which to tax. However, states and some localities can tax income as well. The challenge is with jurisdictional tax competition. States or local governments that impose tax rates that are higher than competitors while not providing higher levels of valued services may face an outflow of people and businesses. The federal government has taken on the role of providing for the basic needs of individuals who lack resources through programs including Temporary Assistance for Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP). Resource-constrained state and local governments stand to benefit greatly from this same type of federal support. The prevailing economic thinking is that legacy cities must increase taxes to compensate for continually eroding tax bases. But prevalent horizontal fiscal imbalance among rich states and poor states, rich cities and poor cities is not going to be remedied through benefits-received and ability-to-pay models and imposed austerity.

Emergency funding allocated through the CARES Act and the American Rescue Plan Act to combat the COVID-19 pandemic are examples of programs with bipartisan support that are reminiscent of the GRS of the 1970s and 80s. Other programs targeting local government fiscal distress have also been implemented, but have not been utilized with the same level of enthusiasm.7They are also examples of two formulasby which federal revenue sharing could be continued. In the event of the next economic downturn, Congress could be ready with a standing countercyclical fiscal policy mechanism to provide funds to fill in the gap of resources state and local governments experience (Galbraith, Lind, and Luby, 2020). Much like during the Great Depression, government dollars would serve the same purpose as private sector dollars, moderating economic declines by essentially allowing local governments to spend their way out of trouble (Williams, 2020).8This kind of program could, in theory, smooth differences in reaction time between federal and state and local governments to subsequent recessions. In this way GRS could become part of the economic toolkit of automatic fiscal stabilizers, ready for when states and local governments need it.

“Revenue sharing could become a part of the economic toolkit known as automatic fiscal stabilizers, available as needed in situations that states and localities cannot control. During downturns, the federal government would provide funds that state and local government could use to cover gaps in their operating expenses, providing a lifeline to teachers, first responders, and other public employees. The economic effect of revenue sharing would be counter-cyclical, moderating economic declines. Revenue sharing might phase back down as the state and local economy and tax base improved.” (Galbraith, Lind and Luby (2020))

From this, we are already aware that programs like GRS can be effective at stimulating the economy. There is an extensive empirical literature supporting that intergovernmental transfers, at times, lead to a much higher increase in government expenditures than would plausibly result from an equivalent rise in personal income. The phenomenon, known as the flypaper effect, is well researched in federal aid, and the GRS is no exception. The “Flypaper effect” occurs when one dollar of grants-in-aid leads to significantly greater public spending than an equivalent dollar of citizen income. Money sticks where it hits, hence the “flypaper” effect. In his analysis of the flypaper effect, Inman (2008) arrives at the conclusion that the flypaper effect is the outcome of the political process itself with the attendant political institutions and politicians doing the policy work. Inman suggests that,

“Once viewed as an anomaly, the flypaper effect should now be seen as a reality of fiscal politics, and its study as an opportunity to fashion central government transfer policies and intergovernmental fiscal institutions that better reflect citizen preferences for local public goods.”

A study of the spending of GRS funds by large cities echoed the importance of understanding the political environment when implementing such policies. Feiveson (2015) found evidence of a strong flypaper effect9in city governments’ useof GRS funds, but highlighted that public sector unions skewed the use of grant funds towards increased wages rather than towards increased government services. GRS was implemented at a time where collective bargaining was gaining strength across the country, emphasizing the need to consider institutional structure and how it may impact both the expenditure effect as well as the type of spending induced by intergovernmental transfers. Going forward, a proposed new GRS or similar program would benefit from an in-depth analysis of the current institutional structure10(such as changing laws and social as well as economic conditions), before implementation.

Most state constitutions place limitations on deficit spending by state governments. Poterba (1994) found that 45 states require the governor to submit a balanced budget and 39 states have requirements for the legislature to pass a balanced budget. The same restriction is true for most local governments. For example, the Uniform Budget and Accounting Act 2 of 1968 prohibits Michigan local governments from deficit spending.11Additionally, most local governments face limitations on the level of debt that can be carried. The Home Rule City Act, act 279 of 1909 gives Michigan cities the ability to bond for debt as well as spells out the limits to the level of debt a local unit can carry (MCL 117.4a). The U.S. federal government has greater liquidity than either state or local governments. This is because the U.S. Federal government is the issuer of currency and therefore doesn’t face the same constraints as households, businesses, and state and local governments which are all users of the currency. After President Nixon suspended the U.S. dollar’s convertibility to gold, the U.S. dollar became a fiat currency, fundamentally changing the way we utilize and react to the national debt.12

### States CP---Can’t Print Money

#### States aren’t allowed to make their own money. This is gov 101.

University of Groningen 12, “Money and the Constitution,” 2012, http://www.let.rug.nl/usa/essays/general/a-brief-history-of-central-banking/money-and-the-constitution.php

Money and the Constitution

The ability of banks to issue money raises some interesting questions about the nature of money and about the legal aspects of its issuance in the United States. On these topics I will now briefly digress. Money is nothing more than a common numeraire which reduces the search costs associated with conducting beneficial trades. Money is also a psychological abstraction. Literally anything can serve in this capacity as long as people are willing to accept it as a medium of exchange, if it maintains its purchasing power reasonably over time, and if it can serve as a convenient unit of measure. An official government edict is not necessary to create money.

The Constitution contains only two sections dealing with monetary issues. Section 8 permits Congress to coin money and to regulate its value. Section 10 denies states the right to coin or to print their own money. The framers clearly intended a national monetary system based on coin and for the power to regulate that system to rest only with the federal government. The delegates at the Constitutional convention rejected a clause that would have given Congress the authority to issue paper money. They also rejected a measure that would have specifically denied that ability to the federal government (Hammond, 92). Although the Constitution does not state that the federal government has the power to print paper currency, the Supreme Court in McCulloch vs Maryland (1819) ruled unanimously that the Second Bank of the United States and the banknotes it issued on behalf of the federal government were Constitutional.

#### Couldn’t be clearer.

Bruce Champ 7, contributing author and former employee of the Federal Reserve Bank of Cleveland , “Private Money in our Past, Present, and Future,” Federal Reserve Bank of Cleveland, 1/1/2007, https://www.clevelandfed.org/en/publications/economic-commentary/2007/ec-20070101-private-money-in-our-past-present-and-future

The government isn’t the only entity allowed to issue money. Private citizens and businesses can too, and throughout U.S. history, they often have. But private money—as such money is called—isn’t issued much these days. What lessons have our experiences with private money taught us, and what do they imply for our money today and in the future?

Who is allowed to issue money in the United States? The founding fathers made it clear that the power to create money would not be taken lightly. Their experiences with money and inflation during the Revolutionary War made them wary of paper money and conscious of the power wielded by those authorized to create it. They gave Congress the right to issue money and forbade the states from doing so. But the federal government isn’t the only entity that has, in practice, issued money. Private citizens and private companies have, too.

### States CP---Can’t MMT

#### States are not monetary sovereigns---attempts to do state monetary policy would be preempted.

L. Randall Wray 20, Professor of Economics at the Bard College, Annandale‐on‐Hudson, “Sovereign Currency and Non‐Sovereign Budgets: The Modern Money Theory Approach,” Public Budgeting & Finance, 08/31/2020, p. pbaf.12251

In recent months, Modern Money Theory has leapt into the public debates about fiscal and monetary policy. Most of the main media outlets have featured interviews of the developers of the approach and have featured virulent attacks by a who's who of prominent economists and policy makers in the United States and abroad. Unfortunately, most of the critiques miss the mark because the critics are confused about the main tenets of the theory. In this section, I will lay out the basics.

Over the past quarter century, a small group of researchers has developed an approach to macroeconomic theory and policy that has come to be called Modern Money Theory (MMT).1 It is based on several traditions that are part of the heterodox approaches to economics—that is, followers of John Maynard Keynes (Keynesian), Thorstein Veblen (Institutionalist), and Karl Marx (Marxist). In particular, it builds on Keynes's theory of effective demand (from The General Theory, 1936; independently developed by Marx); Keynes's theory of the nature of money (from his Treatise on Money, 1930, which followed Georg Friedrich Knapp's State Theory of Money, 1924 [1905]); the “monetary theory of production” adopted by Keynes, Veblen, and Marx; Wynne Godley's sectoral balance approach; the endogenous money approach (resurrected in the 1980s by post‐Keynesians)2; Abba Lerner's functional finance approach to budgeting; and the financial instability approach of Hyman Minsky. A key policy proposal is the job guarantee, also developed by Minsky. MMT has been devoted to the study of the processes involved when government spends and is particularly critical of orthodox theories and policy recommendations. MMT has largely been devoted to integrating these various strands into a unified approach to macroeconomics.3

Here, I will focus on the main conclusion that would be of interest to readers of this journal—which concerns the financial constraints faced by the central (national) government. MMT argues that budgeting by national sovereign governments that issue their own currency must be analyzed quite differently from budgeting by other economic units such as households, firms, or local governments. Although it is common to apply a household analogy to government spending (“If I ran my household budget like Uncle Sam runs his, I'd go bankrupt”), this is false. Households (and other non‐sovereign entities) need to earn income, borrow, or sell assets before spending. They must obtain means of payment to service debt or can become insolvent and be forced into bankruptcy. They must “pay back” debts at some point (even at death, creditors can lodge claims against assets to cover debts). They are subject to credit ratings and can be denied loans. And taken as a whole, non‐sovereign entities face various adding‐up constraints—the paradox of thrift, problems of insufficiency of aggregate demand, and the “liquidity trap”—long staples of Keynesian macroeconomics.4

A sovereign government's finances are quite different. MMT defines currency sovereignty as follows: the sovereign government chooses a money of account and imposes taxes and other obligations (fees, fines), issues currency,5 and issues its own obligations6 all in that unit. To maximize policy space, the sovereign does not peg its currency's exchange rate7 to foreign currency or precious metal and does not issue obligations in foreign currency. If a sovereign does peg the currency, or if it issues obligations denominated in foreign currency, then it is potentially subject to delivering the foreign currency. This can reduce policy space as the sovereign must either maintain a reserve of the foreign currency or have access to it. Often policy will then be directed to ensuring a positive flow of the foreign currency (normally accumulated in the form of reserves held at the foreign central bank, or treasury bonds issued by the foreign sovereign) through current account surpluses or inward capital flows.8

With one major exception (the Eurozone area) all the major developed nations now have currency sovereignty as so defined.9 The main implications include:

1. The sovereign issues its currency before collecting it in taxes.

2. The sovereign cannot run out of its own currency.

3. The sovereign can always make all payments as they come due in its own currency.

4. The sovereign never needs to borrow its own currency before spending.

5. If the sovereign issues debt in its own currency, it can choose the interest rate it will pay.

6. The sovereign can always financially afford to buy anything that is for sale in its own currency.

7. The sovereign never needs to pay back (retire) its debt.

8. While there is no affordability constraint, sovereign spending faces real resource constraints and if it spends too much this can cause inflation and possibly affect exchange rates.

Each of these has been examined in detail by MMT scholars so will only be briefly summarized here (with some further elaboration later in this paper).

The Sovereign Issues Its Currency Before Collecting It in Taxes

From inception, a sovereign cannot collect its own currency in tax payment without first issuing it (since it has a monopoly on issue, the currency cannot come from any other source). While currency can be lent into existence, historically the most common way to provide it is through spending, as sovereign governments typically either stamped coins or printed paper notes that were issued as they spent. The currency returned to the government when taxes were paid. Paper notes were often burned on receipt of taxes; coins could be reissued or melted down for a new coinage.

As it happens, the American colonies were among the first big users of paper money in the Western world (Grubb 2015). Every time an Act authorized issuing paper notes to be spent, the colonies also imposed what they called a “redemption tax” in a related bill to remove the notes from circulation. It was obvious that no notes could be collected in taxes until they were spent.10

This became obscured after the Federal Reserve's (The Fed's) creation, shifting to payments made through reserve credits rather than paper notes. Every time the U.S. Treasury spends, this takes the form of a credit of reserves of the bank of the recipient of the Treasury's spending— rather than the issue of coins or paper notes. Taxes then reverse that—the taxpayer's bank's reserves are debited. But the logic remains the same: reserves cannot be debited for tax payments until they have been created—and the main way that reserves are created is in payments made by the Fed on behalf of the Treasury. Just as the colonial notes had to exist before they could be “redeemed” in tax payment, we need the means of tax payment (bank reserves) today before taxes can be paid.

Modern governments do not usually spend notes and coins into the economy, so that is not the way modern cash gets into the hands of the public. Instead, modern governments issue currency only to meet the demand, usually when households and businesses convert bank deposits to cash. Payments from and to the treasury are now handled by coordination between private banks and the central bank. Now it all takes place on balance sheets and there are four balance sheets involved: the treasury's, the central bank's, a private bank's, and the recipient or taxpayer. This does not change the logic, however, government spending will lead to a credit to a bank's reserves (and a credit to the recipient's demand deposit) while a tax payment reverses this.

The “currency” created by government spending is now central bank reserves—deposits held by private banks at the central bank. Reserves are not included in the usual definition of currency (coins and central bank notes) but for all practical purposes, they are perfectly substitutable for currency at par. Further, like paper money reserves are central bank liabilities, denominated in the state money of account. Reserves can be created by central bank lending (and by central bank open market purchases), but outside of the recent experiments in quantitative easing (QE), most reserves are created when the treasury spends.

The Sovereign Cannot Run Out of Its Own Currency

Sovereign government cannot run out of currency—whether it takes the form of coins, paper money, or electronic reserve entries on the central bank's balance sheet. Today it is just a keystroke. The major central banks demonstrated this fact with QE as they “keystroked” trillions of dollars, euros, and yen reserves as payment for large‐scale asset purchases. Clearly, they could just as easily “keystroke” reserves to banks to allow treasury to spend.

The Sovereign Can Always Make All Payments as They Come Due in Its Own Currency

MMT argues that if all the sovereign's liabilities are payable in its own currency, it already has the capacity to make those payments. Some critics wrongly characterize MMT as a call for turning government spending over to the central banks to “print money” to pay for spending.11 They argue that it is a policy prescription, and that until this is done, the sovereign government might not be able to make promised payments. This is not correct. Modern procedures already require that central banks credit bank reserves dollar‐for‐dollar (or yen‐for‐yen) as the treasury spends.12 The treasury issues checks (or increasingly handles payments electronically) and the central bank simply handles clearing—which takes the form of reserve credits to private banks. (The central bank also provides reserves to handle clearing between banks.) At the same time, the central bank debits the treasury's account. From the central bank's perspective, it is clearing accounts, not “creating money” to “pay for” treasury spending. There is no such operation called “printing money to pay for spending” in the Fed's menu and indeed what is usually described is prohibited by the Federal Reserve Act. However, unless the central bank is going to start “bouncing” treasury checks, reserves are created dollar‐for‐dollar with treasury spending.

Until MMT investigated the procedures used, it was not clear how the treasury ensures it has sufficient deposits to be debited by the central bank as treasury spends. This requires close coordination among the central bank, treasury, and private banks. The treasury obtains credits to its account at the central bank through tax receipts and bond sales. However, from inception, taxpayers and bond purchasers do not have currency (or reserves, today) to pay taxes or buy bonds unless government has already provided it.13

Logically, the currency creation through spending comes first. But how can the treasury spend first, since it needs deposits (at the central bank) to avoid bouncing checks? Central banks are generally prohibited from providing overdrafts (although they almost certainly do provide them for at least short periods—the proof is that treasury checks are never returned due to insufficient funds).14 Hence, central banks worked out procedures to ensure that the treasury obtains deposits through sales of bonds that are purchased by banks using either overdrafts or borrowed reserves supplied by the central bank. This serves effectively as an end‐run around the “no treasury overdraft” rule. Once the treasury spends, bank reserves are replenished. If banks do not want to hold bonds, they can be sold to the central bank in secondary markets.

However, banks normally do not want excess reserves created by government spending, so they willingly exchange them for (higher) interest‐earning bonds. A key insight of MMT is that bond sales by the treasury or by the central bank are functionally equivalent operations.15 The conventional view is that treasury sales are a borrowing operation while central bank sales are an open market operation, but in either case, the functional impact is to withdraw reserves from banks. Government spending puts reserves into the banking system and the reserves can only leave the system through bond purchases, tax payments, or cash withdrawals from deposits. Cash withdrawals are normally small (with seasonal variability); national government taxes are large but with temporal variation and are usually—for most countries—significantly lower than sovereign government spending. To avoid wide fluctuations of reserves and as well to deal with net reserve accumulation due to government spending in excess of tax payments, the central bank and treasury coordinate bond sales to drain excess reserves. For this reason, MMT sees bond sales as part of monetary policy operations—whether undertaken by the central bank or by the treasury. Let us see why MMT argues that bond sales are not a borrowing operation.

The Sovereign Never Needs to Borrow Its Own Currency Before Spending

Sovereign governments do not really borrow in their own currency—unlike households, firms, and lower levels of government. The sovereign is the issuer of the currency—and indeed must supply the currency before it can sell bonds. Mosler calls bonds an “interest rate maintenance account” held at the central bank to emphasize the functional impact of bond sales (see Wray 1998, 88). When a bond is sold, reserves are debited and bond holdings are credited. Let us first look at the case, in which the Treasury sells bonds to a bank (new issues are in fact handled by special dealer banks—who then place them into markets). They use their reserve deposits at the Fed to buy the bonds sold by the Treasury. Both of these accounts are held at the central bank, which debits their reserve account and credits their treasury bond account. Essentially, this is like a transfer from a “checking account” (reserves) to a “savings account” (bonds) to earn more interest. When a nonbank entity (household, firm) buys a bond, its demand deposit is debited and its bank makes the payment on behalf of the customer. Again, the Fed debits the bank's reserves. So, no matter who buys the bond, bank reserves are debited.

Generally, the central bank's overnight interest rate target (federal funds rate in the United States) is higher than the rate paid on reserves (the Fed paid zero on reserves until the Global Financial Crisis [GFC] when it began to pay a “support rate”) and it uses sovereign bonds as the instrument to hit the target—selling bonds to remove reserves and buying bonds to add them.16 The shortest maturity treasury debt serves as the alternative to bank lending of reserves in the overnight market (the federal funds market in the United States) and its rate is set by policy.17 Rates on other maturities are more complexly determined although expectations of central bank policy play an important role.

If the Sovereign Issues Debt in Its Own Currency, It Can Choose the Interest Rate It Will Pay

The central bank can set the rate on any maturity by announcing that it stands ready to buy bonds at the announced price equivalent. This is how the Fed kept the interest rates extremely low throughout World War II. Note also that the distribution among maturities is a policy decision (referred to as “debt management”). This means both the interest rate on, and the composition of, government debt is under the control of government. The Fed can control the first, and the Treasury controls the second.

While there is a widespread fear that “bond vigilantes” can drive rates up through a “strike,” that is unlikely and easily countered by government policy. In the United States, for example, dealer banks are required to place bids for treasuries sold at auction. Before the auction, the treasury surveys preferences over maturities to offer what the market wants. The Fed cooperates with banks to ensure they can obtain the reserves they need to buy bonds.18 The treasury maintains special accounts at private banks to temporarily deposit proceeds from bond sales (and from tax receipts), then shifts them to the Fed to meet projected clearing of government payments. The U.S. Treasury usually faces a demand for securities that exceeds the supply—often by a large margin. The question is not whether the Treasury can sell enough but rather at what “price” (interest rate), and it often tries to minimize interest expense by offering the maturities desired. Using current procedures, there is no question concerning the ability to pay all promised interest due by “cutting a check” or making electronic payments that will be cleared by the Fed.

Furthermore, the Treasury does not have to issue any bonds as rules can be changed to allow overdrafts at the Fed. In that case, the Fed can still maintain a nonzero interest rate target by paying interest on reserves (as it has done since the GFC), rather than using bonds as the interest‐earning alternative to keep the federal funds rate up in the presence of excess reserves. Note that I am neither arguing that this change should made, nor is it necessary to make this change. It is, however, within the mandate of the Congress to change the rules governing what the Fed should do—the Fed is a “creature of Congress” and subject to amendments to the Federal Reserve Act. Bond vigilantes could strike all they want—demanding more bonds—but if Congress chose not to allow new issues, the markets would learn to operate without them.19

Normal Fed operating procedure ensures that banks always get the reserves they need to buy bonds—which allows the Treasury to get the deposits it needs in its account at the Fed. Further, as discussed, dealer banks must submit reasonable bids for bond tenders or risk sanctioning and lose the right to deal in the most coveted financial asset in the world—U.S. Treasury debt. Treasury bond sales are thus quite different from “borrowing” by households, firms, and local and state governments—an issue to which I turn in the next section.

The Sovereign Can Always Financially Afford to Buy Anything That is for Sale in Its Own Currency

What MMT research has shown is that “affordability” is not a legitimate concern for the sovereign government—it can finance its spending and meet all obligations as they come due. It has substantial control over interest rates and does not face a market full of vigilantes who can strike for higher rates. Even if they did, government can exert control over its central bank. The Fed, after all, is a “creature of Congress,” subject to the Federal Reserve Act (as amended several times over the years). Economists have developed strange arguments defending what is supposed to be an inviolable principle of central bank independence, but in fact in trying times (such as both world wars), the Fed has been placed under the Treasury in pursuit of the public interest to keep rates low as government spending expanded to 50 percent of gross domestic product (GDP).

The Sovereign Never Needs to Pay Back (Retire) Its Debt

With the exception of a short period of time in the administration of Andrew Jackson (i.e., around 1837), the U.S. government has been continuously in debt. Since Jackson's time, it has never paid back more than a very small percent of the debt issued. As Eric Tymoigne (2014) shows, the debt‐to‐GDP ratio has grown at an average rate of 1.82 percent per year since 1791. Until the 1930s, only major wars caused a rapid growth of the debt ratio, and the rate of growth was just 0.31 percent per year. Since 1931, the ratio has grown at a pace of 4.22 percent per year. Since 1931, the ratio has increased in 83 years and fallen in only five years. The astute reader might surmise that there is something normal and even sustainable about budget deficits and government debt. The sovereign government of the United States has not made it a habit of “paying back” the debt and will not do so. None of the boogeymen attached to deficits and debt (rising interest rates, insolvency, involuntary default) apply to sovereign government debt. If the United States does default on debt, it will be voluntary and it will be because Congress has ordered it. I think that is unlikely—and so do markets, as evidenced by the fact that when the credit ratings agencies downgrade U.S. government debt (or Japanese sovereign government debt), there is no significant effect on interest rates. Tymoigne shows that it is not the quantity of debt, the size of the deficit, or the debt ratio that drives the interest rate on long‐term government debt. It is the Fed's policy rate (federal funds rate).

While There is No Affordability Constraint, Sovereign Spending Faces Real Resource Constraints and if It Spends Too Much This Can Cause Inflation and Possibly Affect Exchange Rates

Nothing in this section should be interpreted to mean either that real resource constraints should be ignored, or that too much spending would not cause inflation. Further, increasing government spending can mean that too few real resources are left for the private sector's use. Since the government can always win a bidding war it needs to be careful to target its spending toward sectors with excess capacity and toward resources that are not fully utilized. Otherwise, it can cause inflationary pressures even before resources are fully employed—particularly if its spending competes in the more advanced sectors that are highly unionized with skilled workers and oligopolized employers with pricing power. This was believed to be a real problem at the end of the 1960s with what was dubbed “Military Keynesianism” that kept aggregate demand high by pumping government spending into the defense and aerospace sectors. Although excessive demand has not been a problem in the United States since then, MMT does not ignore real resource constraints.

Critics have argued that MMT is dangerous because it encourages politicians to boost spending, which would cause inflation. MMT is supposed to rely on the belief that if inflation should appear, then politicians would quickly raise taxes to drain the excess demand. The critics then argue that this is extremely naïve because raising taxes would take a long time and a big effort that exposes elected representatives to the backlash of taxpayers who hate tax increases. This is not the MMT proposal. Instead, we prefer automatic stabilizers—such as a progressive income tax system so that tax revenues rise quickly in an economic boom. As a matter of fact, the U.S. federal income tax system is already strongly procyclical so that tax revenues grow quickly—indeed, probably too quickly. I have argued that booms are not killed by old age, but rather by taxes (see Wray 2019). In addition, I recommend other anti‐inflation policies should government undertake a large spending program (such as a major war or financing a comprehensive Green New Deal)—see Nersisyan and Wray (2019).

MONEY USERS: STATE AND LOCAL GOVERNMENT

State and local governments are in an entirely different situation. MMT sees them as currency users—in a position somewhat analogous to households and firms. They really must obtain finance before they spend—either using income flows, borrowing, or asset sales. When the new Euro currency was introduced, MMT analyzed the member states as if they were U.S. states— again, as currency users.20 Each was giving up its own currency to join a monetary union, adopting the Euro. Ultimately, the Euro issuer is the European Central Bank. Similarly, the new U.S. states joined a monetary union based on the dollar, with each giving up its colonial currency in favor of adopting the U.S. dollar.

In the case of the United States, the issuer is the national government. The U.S. Constitution gave to Congress the sole authority to issue the currency and for much of U.S. history that came under the Treasury's responsibility. The United States was a relative late bloomer as many other nations had long ago created central banks to handle state finances and gradually their central bank notes came to be the predominant form of currency. After the Federal Reserve's creation, its notes, too, eventually replaced Treasury notes (and coins) as the main currency. The Treasury stopped issuing currency to make its payments—coins are issued solely on demand in exchange for Federal Reserve liabilities (notes and reserves), so that they are not “spent into existence.” Instead, all Treasury spending and receipts pass through the Fed— which makes or receives all payments from and to the Treasury. As discussed above, these payments take the form of credits to bank reserves (bank deposits held at the Fed)—which are perfectly substitutable to Fed notes or Treasury coins. Effectively, most “currency” now takes the form of reserves, although Federal Reserve notes are in circulation and abroad, and Treasury coins are in circulation mostly domestically.

In the crisis, the European Central Bank (ECB) eventually had to buy the debt issued by member states to relieve severe financial constraints some faced. By contrast, in the United States, state and local government debts are not bought by the central bank.21 Their debt is truly subject to market discipline. In the Euro area, market discipline can be subverted to some extent by the domestic central bank, and entirely by the ECB if it so chooses.

In the United States, virtually all states are required to balance their budgets—at least on their current accounts. They are, however, permitted to borrow for capital projects. Like the Euro nations, they vary in their perceived credit‐worthiness and private credit ratings agencies provide ratings for state and local government debt. States rarely approve budgets that are not balanced, and when their debt is downgraded they react quickly by cutting spending. There is a large divergence between the debt‐to‐GDP ratios of Eurozone nations and U.S. states (with state government debts measured relative to state GDP). Some Eurozone nations have debt ratios of 100 percent or even higher. The U.S. states typically have ratios well below 20 percent—less than a third of what the Maastricht criteria allow. Eurozone nations, on the other hand, budget for deficits—and are permitted to do so by Maastricht criteria that allow deficits of three percent of GDP (and most have exceeded this ratio at one time or another).

#### State governments are not allowed to issue their own fiat currencies.

Satyajit Das 21. Financier and author of A Banquet of Consequences – Reloaded (March 2021) and Fortune’s Fool: Australia’s Choices (forthcoming March 2022), 12-9-2021. "Spending without taxing: now we’re all guinea pigs in an endless money experiment," https://www.theguardian.com/commentisfree/2021/dec/10/spending-without-taxing-now-were-all-guinea-pigs-in-an-endless-money-experiment.

MMT is actually a melange of old ideas: Keynesian deficit spending; the post gold standard ability of nations to create money at will; and quantitative easing (central bank financed government spending) pioneered by Japan. However, there are several concerns about MMT.

A 46% rise in the price of petrol has contributed to inflation in the US jumping to 6.2% in October.

‘Wake up’: markets warn central banks to get a grip on inflation

First, the source of useful, well-compensated work is unclear. While MMT suggests taxes can be used to direct production, government influence over businesses that create jobs is limited. The impact of labour-reducing technology and competitive global supply chains is glossed over. Getting one person to dig a hole and another to fill it in creates employment, but it is of doubtful economic and social value. The woeful record of postwar centrally planned economies, where people pretended to work and the government pretended to pay them, highlights the issues.

Second, excess government spending and large deficits financed by money creation risk creating inflation. MMT argues that this is a risk only where the economy is at full employment or there is no excess capacity, and can be managed by fine-tuning intervention.

Third, MMT may weaken the currency. Roughly half of Australia’s government and significant amounts of state, bank and business debt is held by foreigners. Devaluation and loss of investor confidence in the stability of the exchange rate would affect the ability to and cost of borrowing overseas and importing goods. The expense of servicing foreign currency debt would rise.

Fourth, while available to nation states able to issue their own fiat currencies, it is unavailable to state governments, private businesses or households who are major borrowers in Australia.

#### States are not allowed to mint coins.

Robert A. Mundell ‘97. Columbia University. “MONEY AND THE SOVEREIGNTY OF THE STATE.” Paper prepared for the International Economic Association Conference in Trento, September 4-7, 1997. https://www-ceel.economia.unitn.it/events/monetary/mundell14.pdf

At the time of the Constitutional Convention in 1787, the drafting committee included a proposal from the old Articles of Confederation authorizing Congress to coin money and emit bills of credit. Debate turned on whether the right to coin money and/or create paper money should be explicitly prohibited; one man proposed that the whole Constitution be rejected if it retained the paper money authority. A compromise of sorts was reached with the draft authorizing coinage alone, but no explicit prohibition was made of paper money.

2 Another important issue concerned the distribution of the money power between the states and the central government. The drafting committee proposed to bar states from coining money without congressional consent. Two delegates moved that the prohibition be extended to emitting bills of credit and to making anything but gold and silver coin a legal tender, and that the bar be 51 absolute instead of revocable at the direction of Congress. These provisions passed and settled the matter in favor of the central power, but left up in the air the important question of whether 52 Congress had the right to establish a bank.

The great debates settled some of the issues relevant to the money power: Congress can, and the states cannot, mint coin and establish its value; the states cannot issue currency as they did in colonial times. But some other issues were left unresolved. Could Congress charter banks that could issue their own notes? Could it control banks chartered by the states? Could Congress (a) issue paper money and (b) make it legal tender? What was the relationship between the monetary authority of Congress and its seemingly unrestricted borrowing power? These issues were so contentious that had they been forced to a conclusion, they would have risked the unity needed to pass the Constitution.

## AT: Capitalism K

### Perm---2AC

#### Perm---do both. Anticapitalist movements fail without degrowth.

Timothée Parrique & Giorgos Kallis 21, Kallis is an environmental scientist; Parrique holds a PhD in economics, “Timothée Parrique, Giorgos Kallis- Degrowth: Socialism without Growth,” 2-10-2021, Brave New Europe, https://braveneweurope.com/timothee-parrique-giorgos-kallis-degrowth-socialism-without-growth

Conclusions: Degrowth is as anti-capitalist as it gets

The ideology of growth has become the powerhouse of modern capitalism and we do not understand why some socialists are reluctant to join the battle against a phenomenon that is socially divisive and ecologically unsustainable. A socialism without growth but with well-being. Socialism and degrowth are two of the most powerful concepts we have to criticise capitalism and open-up the future.

As is evident by now, we do use the C-word, a lot. Certain Marxist commentators have accused degrowth of never explicitly questioning capitalism. Phillips (2015 depicts degrowth as a “small-scale steady-state capitalism.” The degrowth project some would think resembles the film Downsizing (2017), where exuberant consumerism is made environmentally possible by shrinking people down to a few centimetres.

So, let us be clear: degrowth is not miniature capitalism with tiny corporations, tiny speculative financial instruments, and tiny free trade agreements. It is not austerity within capitalism. It is an alternative system of provision altogether – not just smaller and slower, but different.

You may ask why focus on growth and not just capitalism? Well, try to compare the occurrence of “economic growth” versus “capital accumulation” in the news. As Gareth Dale has forcefully argued, economic growth is the ideology that has turned the specific interest of capital to grow (for returns, and for keeping social peace) into a generalized social objective assimilated by the population. This is not an ideology that will go away by refusing to confront it or beautifying it with nice adjectives. The fact that this ideology survived even the end of capitalism (or at least of a certain type of capitalism) in ex-socialist regimes should give pause for thought. Socialists who defend growth must also think twice whether they are redwashing capital, redressing the dreams that capitalism sells as socialist dreams.

Growth is the child of capitalism, but the child grew up and took over the head of the family. Capitalism’s interest in accumulation is promoted and legitimised through – and in the name of – “growth.” The critique of growth is the most fundamental critique of capitalism – one that criticises not only the means capitalism uses but the very ends it sells. This makes degrowth and (eco)socialism natural allies, not adversaries.

#### An MMT job guarantee would sabotage the conditions of scarcity necessary for capitalism.

Jason Hickel 20, professor at the Institute of Environmental Science and Technology, Autonomous University of Barcelona (ICTA-UAB), Spain, and a visiting senior fellow at the International Inequalities Institute, London School of Economics and Political Science, UK, “Degrowth and MMT: A Thought Experiment,” Jason Hickel, 9/23/20, https://www.jasonhickel.org/blog/2020/9/10/degrowth-and-mmt-a-thought-experiment

Modern Monetary Theory (MMT) is getting a lot of attention these days, thanks in large part to the excellent work of Stephanie Kelton and Nathan Tankus, two of the movement’s most effective communicators. Over the past few weeks a number of people inspired by their work have asked me whether there is scope for thinking about degrowth from a MMT perspective. My answer: definitely. In fact, the two belong together.

First, a bit of background. MMT may sound complicated but in fact it is remarkably simple (here is a good place to start). It points out that governments that control their own currencies are not like households. They do not have to “balance their budgets”, and, crucially, they do not have to tax or borrow before they can spend. In reality, they create the money they spend - and they can create as much of it as they want. This is clear to anyone who has been paying attention since the global financial crisis of 2008. Countries like the US and UK have created extraordinary amounts of money to prop up the banking system. The same thing is happening right now, in response to the COVID-19 crisis: governments are simply creating the money they need to respond. This has always been the case, of course, but right now it’s happening out in the open, for all to see. The notion of budget constraints has been revealed as a myth.

This is not to say that governments can create and spend money without limit. MMT economists recognize a number of limits, but they have nothing to do with budgets or deficits. The key limit is inflation: if you spend too much money into the economy, demand gets too hot and risks driving excess inflation. MMT economists propose that we should use taxation to mitigate this risk. In MMT, the purpose of taxation is not to fund government spending (again: governments fund spending simply by issuing currency), but rather to reduce excess demand. Crucially, taxation is also used to reduce inequality. You tax the rich not to fund government spending, but rather simply to remove money from people who accumulate too much, recognizing that inequality is corrosive to society and to democracy and we are all better off without it.

All of this changes how we think about money. MMT proposes that we should understand money as something we use, rather than something we own. The government creates money, spends it into the economy for all of us to use in our daily lives, and mitigates the dangers of excess money or excess accumulation by pulling some of it back out, thus keeping things in balance.

So, what does all of this mean for degrowth?

Let’s start by clarifying what degrowth is trying to do. Degrowth has two parts: an ecology part and a social justice part. It seeks to (a) reduce excess resource and energy use (specifically in high-income nations) in order to bring the economy back into balance with the living world, and (b) to do so while at the same time reducing inequality and improving people’s access to the things they need to live long, healthy, flourishing lives. So far, degrowth scholars have developed a range of convincing and feasible policy proposals for how to accomplish this double objective. I discuss the main ideas in Chapter 5 of Less is More.

But we can also approach this challenge using MMT tools - and indeed perhaps it is even easier to think of it this way. The first step is to harness the power of the government’s role as the issuer of currency to do three urgent things:

1. Develop generous, high-quality universal public services. Not just healthcare and education, but also public transportation, affordable housing, etc. Over and over again, the evidence is clear that universal public services (not perpetual GDP growth) are the key to a happy, healthy, flourishing society.

2. Roll out renewable energy infrastructure to completely replace fossil fuels in a short period of time – a matter of years, not decades – while regenerating ecosystems. Thus far we have not done this because we are told “it’s too expensive”. That is a lie. The best news of the 21st century is that every single government that controls its own currency can fund a rapid transition to renewables without even thinking twice about cost.

3. Introduce a public job guarantee, so that anyone who wants to work can get a job doing socially useful things that communities actually need (including working in public services, building renewable energy infrastructure, and regenerating ecosystems), with a living wage, at 30 hours a week. This has the additional effect of raising wages and reducing working hours across the economy, effectively shifting income from capital to labour.

This approach reduces inequality, decommodifies key parts of the economy, and ensures that everyone has access to meaningful, well-paid work and high-quality public services. In other words, it reorganizes the economy around use-value rather than exchange value – an objective that is central to degrowth thought. So this takes care of the social justice aspect of degrowth.

Of course, all of this government spending puts money into the economy, and into people’s pockets, and private consumption will begin to rise (although this is mitigated to some extent because, as I explain in Less is More, shortening the working week, reducing inequality and expanding access to public services actually takes significant pressure off of private consumption). Classic MMT sees this as a problem because it might cause excess inflationary pressures. But from the perspective of degrowth it is a problem because it will lead to an increase in resource and energy use.

This is where taxation comes in. In classic MMT you use taxation to reduce demand in order to control inflation. But we can also use taxation to reduce demand in order to bring resource and energy use down to target levels. And of course we can do this in a progressive way, by starting with the rich (which is important, because, as Thomas Piketty has pointed out, reducing the purchasing power of the rich is one of the single most effective climate policies we can deploy, because the energy use of the rich is way out of whack). So, in short, the government would create money in order to expand the use-value economy (the things that people actually need to live well), and would then use taxation to regulate the exchange-value economy, and to reduce excess private consumption (in order to keep the economy in balance with the living world).

With this approach, the age-old question of “will we have enough GDP in a degrowth scenario to provide for thriving lives?” becomes irrelevant. We can generate the funding for public services and the job guarantee without even a thought to GDP. GDP becomes an irrelevant indicator. Indeed, parts of the economy that are presently measured by GDP might shrink, but that’s okay because GDP is not the primary arbiter of provisioning. In the scenario I have described, the majority of provisioning is done directly. So, exchange-value (GDP) might decline but use-value (access to the things we need to live well) improves.

Now, some degrowth scholars have worried about MMT in the past, because we know that debt is always a bad thing when it comes to resource and energy use. The thinking goes that, just as debt represents a claim on future labour, so too it represents a claim on future resource and energy use. And because debt comes with interest, and interest grows, debt generates real pressures for GDP growth, which of course has severe ecological impact. But in MMT, deficit spending is not the same as what private borrowers experience as debt. Why? Because deficit spending does not in fact have to be paid back.

This breaks with how governments usually think about deficits. We often hear that because there is a deficit, we have to do all we can to grow the economy in order to pay it down. MMT argues that this simply isn’t true. Indeed, we might say that the deficit is just an alibi for those who seek to grow the economy for other purposes (i.e., to maximize elite accumulation). The alibi is false, and we can call it out.

All of this raises a question. If governments can create and spend money so easily, then why have they so long told us otherwise? Well, according to MMT economists, the narrative of “fiscal responsibility” is a ruse that’s intended in large part to prevent people from demanding that governments provide job guarantees and universal public services (remember, governments are happy to create money when it comes to financing wars and pumping up asset values, but when it comes to paying for public services, they say it’s not possible). Why would governments do such a thing? Because if people have access to a public job guarantee doing socially useful work, and if they have access to high-quality universal services, then why on earth would they ever agree to do socially unnecessary, meaningless or degrading labour for private firms, if the goal of such firms is primarily to accumulate profit for the holders of capital? They wouldn’t.

In other words, governments have to maintain an artificial scarcity of money in order to ensure a steady flow of cheap labour for private firms. As I argue in Less is More, capitalism seeks to sabotage public abundance in order to generate private riches.

This leaves us with an interesting point. MMT proposals align elegantly with one of degrowth’s key observations, namely, that if growthism depends on the perpetual creation of artificial scarcity, then by reversing artificial scarcity – by providing public abundance – we can dismantle the growth imperative. As Giorgos Kallis has put it, “capitalism cannot survive under conditions of abundance”. MMT provides an opportunity for us to create a post-growth, post-capitalist economy.

### Perm---1AR

#### **Combining socialist growth with planning is key to avert catastrophe**

Timothée Parrique & Giorgos Kallis 21, Kallis is an environmental scientist; Parrique holds a PhD in economics, “Timothée Parrique, Giorgos Kallis- Degrowth: Socialism without Growth,” 2-10-2021, Brave New Europe, https://braveneweurope.com/timothee-parrique-giorgos-kallis-degrowth-socialism-without-growth

Notable (eco)socialists have recently criticized the idea of degrowth 1. Here we want to argue that such criticism is misplaced. Growth is a problem over and above capitalism. A sustainable eco-socialism should reject any association with the ideology and terminology of growth. 21st century socialists should start thinking how we can plan for societies that prosper without growth. Like it not, growth is bound to come to an end, the question is how; and whether this will happen soon or too late to avert planetary disasters.

Any form of endless growth is ecologically unsustainable

The typical socialist response to degrowth is that it is capitalism, and capitalist growth, that are the problem, not economic growth. But here’s the thing: no economic growth can be sustainable. An increase in material living standards will require, well, more materials. This is independent of whether the economy at stake is capitalist, socialist, anarchist, or primitive. Growth in the material standard of living requires growth in the extraction of materials and the excretion of pollution (growth in the standard of living in general does not; we discuss this below). Result: as of today – and very likely tomorrow as well – economic growth strongly correlates with energy and material use, at the global level which is the only one that shows the full picture in a globalised economy.

Leading Marxist theorist David Harvey calls the idea of compound growth the madness of economic reason, and the most lethal of capitalism’s lethal contradictions (which makes us wonder why would socialists spend their time trying to salvage this madness). To see how mad it is, consider the following. An innocent 3% growth each year, means a doubling of the economy every 24 years, some ten times bigger by the end of the century, quickly growing to an infinite size. Substitute the economy with whatever you like (‘energy’, ‘water’, ‘bicycles’, ‘massages’). The idea of infinity is pure madness, full stop. It is the generalisation of the logic of individual capitalists who expect to pocket their 3-5% return every year, rain or shine. But it is not something that a society can sustain for long.

Some socialists dream of a Fully Automated Luxury Communism where new technologies enable the absolute decoupling of economic output from the environment. So far, this has not happened, not even close, and there are doubts as to whether the future holds better prospects. Like it or not, economies too have to obey the laws of physics. For example, thermodynamics tells us that energy can neither be created nor destroyed but only transformed, and that its quality moves inexorably towards a less usable or useful state. This means there is no silver-bullet technology that can make an increase in the material standard of living immaterial – economy is fundamentally embedded within ecology.

Of course, certain activities are more nature-intensive than others; and so potentially these could grow for a longer period without disrupting the biosphere. For example, fossil fuels are more disruptive than solar energy. But that does not mean solar energy opens the door to boundless growth. A better organisation of production and new technologies can increase productivity and lead to a relative decoupling with less resources used per product – e.g. more efficient solar panels. But if the quantity of solar panels increases at a compound rate without limit, it will, one day, start to put pressure on either resource availability or lead to ecological damage. In other words, nothing material can be infinite, regardless of whether the economy is capitalist, socialist, or anything else in between.

Furthermore, it is one thing to decarbonise with renewable energies an energy system at its current size, or one fifth of it (a reduction in energy use which studies show is feasible with existing sufficiency and efficiency measures), and another to decarbonise a system that has grown ten times bigger by the end of the century (remember 3% growth per year).

Our suggestion: democratic socialist planning would have to consider the constraining requirement of a degrowth use of energy and materials. This is not too much of a problem because, as we will soon argue, many of the activities that are heavy in energy and materials today do not need to exist under socialism. There is too much superfluous activity under capitalism, which serves nothing else but the need of capitalists to extract surplus value and make profits. The goal instead should be socialism without growth, a sustainable socialism – an economic system that manages to satisfy the needs of its people without clinging to capitalist ideas of constant expansion and without of course overshooting planetary limits.

### Perm---AT: MMT Link

#### The MMT JG can be repurposed as a weapon in the class struggle. This is obviously compatible with their K.

Christopher Olk et al. 22, Christopher Olk is affiliated with the Otto-Suhr Institute for Political Science, Center for International and Comparative Political Economy at the Free University of Berlin; Colleen Schneider is associated with the Institute for Ecological Economics at the Vienna University of Economics and Business; Jason Hickel is linked to both the Institute for Environmental Science and Technology, Department of Anthropology at the Autonomous University of Barcelona, and the International Inequalities Institute at the London School of Economics and Political Science, “How to Pay for Saving the World: Modern Monetary Theory for a Degrowth Transition,” 4172005, 07/25/2022, Social Science Research Network, doi:10.2139/ssrn.4172005

Degrowth scholars may also agree with a second critique: Marxists and Kaleckians point out that while any government may be technically able to ensure full employment, the reproduction of capitalist social relations requires a “reserve army” of unemployed that disciplines workers, whereas full employment could undermine this core tenet of capital accumulation (Lapavitsas & Aguila, 2020; Merchant, 2021). Business interests thus pressure the state to employ deflationary policies that maintain a certain level of unemployment (Feygin, 2021). MMTists have argued that this critique applies to “aggregate pump-priming", whereas the job guarantee program proposed by MMT avoids this issue by setting a floor on labor, rather than actively bidding for labor (Mitchell and Watts, 2003). To the extent that MMT economists seek to realize their vision within the capitalist economy, they may still appear ignorant of capitalist class relations and the states’ complicity in their reproduction. Instead, the demand for full employment should be seen as a strategic tool for escalating class struggle which, as Marxists would agree, is the key to eventually transcending capitalism.

### Perm---AT: Sharing Economy Links

#### Perm do both---sharing economy can be an enabler for anticapitalism.

Mikko Laamanen & Stefan Wahlen 19, Mikko Laamanen is Lecturer in Marketing at Royal Holloway, University of London, Stefan Wahlen is Professor in Food Sociology at the University of Giessen, “The sharing economy and lifestyle movements,” Chapter 5 in Handbook of the Sharing Economy, 2019

INTRODUCTION

The sharing economy emerged in the late 2000s with the promise of an emancipatory and participatory sustainable economy, which started to unfold in the aftermath of the Great Recession and in the context of the devastating pace of increasing overconsumption. Collaborative consumption in the sharing economy rests on alternative modes of resource allocation, exchange, and social relations (e.g., Bardhi and Eckhardt 2012; Belk 2010; Botsman and Rogers 2010; Cruz et al. 2018; Felson and Spaeth 1978). The functional core of the sharing economy is the material and immaterial assets brought out of disuse into mutual access and recirculation through physical and digital platforms, and communal interaction (e.g., Acquier et al. 2017; Cheng 2016; Frenken and Schor 2017).

Current observers of the sharing economy oscillate between seeing the phenomenon as, on the one hand, a creation of a liberatory space by socially oriented and environmentally aware collectives, and on the other hand, a new form of turbocharged, rent-seeking capitalism backed by venture-capital financed platforms (see, e.g., Cruz et al. 2018; Frenken and Schor 2017; Heinrichs 2013; Laamanen et al. 2018a; Laamanen et al. 2018b; Martin 2016; Slee 2015; Wahlen and Laamanen 2017). Our interpretation of the sharing economy follows the former view: we see it as a utopian economic model that provides a means of resilience to localities, strengthening the social grid by creating reciprocal and equal relations as well as collective identification in economic activity. In this chapter, we approach the sharing economy from a social movement perspective to account for how collective lifestyle and identity play out in resistance to the exploitative and profit-maximizing tendencies of neoliberalism seeping into the sharing economy.

With our approach, we engage in the ongoing dispute on the sharing economy with regard to its relationship with capitalism. The aim of this chapter is to elaborate on resistance by lifestyle movements towards the neoliberalization of the sharing economy. For the most part, the sharing economy may well stand for neoliberal cooptation of collaboration and pacification of radicalism through which people come to accept the individualization and commercialization of their participation on platforms and communities. The social movement character in the sharing economy nevertheless becomes evident when we pose the question when and how communities become mobilized in collective action to address problems of the mainstream economy. Collective identities and lifestyles support practices with which these communities resist neoliberalism. We thus ask: how do collective lifestyles and identity enable resistance practice in the sharing economy? In more specific terms, we examine sharing economy movements by building upon existing research on theories of new social movements (Buechler 2011; Melucci 1989, 1996), lifestyle movements (Haenfler et al. 2012), and their enactments within consumption (Wahlen and Laamanen 2015).

We contribute to research on consumption and the sharing economy by emphasizing the everyday as a locus for social change (see Wahlen 2011; Yates 2015), and in identifying and elaborating collective resistance practices that challenge neoliberalism and its causatum (della Porta 2015). This chapter begins with positioning the sharing economy in the contemporary neoliberal political organization of the economy. Of particular interest to this story are economic counter-movements. We then elaborate on the conceptual understanding of lifestyles in movement collective action to further consider the various forms of resistance practice in the sharing economy communities. We close with a discussion on how lifestyle movements of the sharing economy build from everyday resistance, with suggestions as to what relevance this carries to general understanding of the sharing economy and future research.

THE SHARING ECONOMY, NEOLIBERALISM, AND COUNTER-MOVEMENTS

Originally, the sharing economy advocated relocalization, rehumanization, and recommunalization of economic activity. Subsequently, the sharing economy is increasingly considered as a conceptual misnomer—a floating signifier—while in practice, rather than being a liberating force, it brings individual responsibility, the commercialization of everyday life, and unfettered competition as part of the daily experience of people. Through these moralities of neoliberalism (see Amable 2011), the sharing economy has become dubbed “neoliberalism on steroids” (e.g., Martin 2016; Murillo et al. 2017). This chapter considers the sharing economy in its more radical parts as a response to neoliberalization as its counter-movement with its own practice and morality (see also Kornberger et al. 2018; Laamanen et al. 2018b).

This perspective connects with Polanyi’s original idea of double-movement, representing the “action of two organizing principles in society, each of them setting itself specific institutional aims, having the support of definite social forces and using its own distinctive methods” (Polanyi 1947/2001, 138‒9). During the first great transformation, the reaction to the liberal economic movement was followed by a social protectionist countermovement, which opposed the marketization of societal and economic relationships (Polanyi 1947/2001). Tensions between conflicting economic interests in the first great transformation were pacified when the Fordist settlement provided social protections and higher wages for workers in exchange for increased ability to consume (which ultimately benefited businesses; Glickman 2009; Lichtenstein 2002).

Della Porta (2015) considers the rise of neoliberalism as the second great transformation, marking the beginning of the post-Fordist period of flexibilization and precarization of the workforce and, ultimately, the consumer. When neoliberalism produces an individualistic consumer, the collective foundations of morality embedded in family, community, and class are abandoned (Binkley 2004; Laamanen et al. 2018b). Given the manner in which neoliberal assumptions became woven into the fabric of society, the economic relations and institutions neoliberalism promotes became viewed as the universal, normal state of affairs, and void of human agency. The perception that neoliberalism provides prosperity is challenged by various authors who instead see it as the agentic endeavor of business and politics to undermine democracy with unaccountable organizations and undemocratic, secretive decision-making (see, e.g., Springer et al. 2016). Beyond such democratic deficits, we are witnessing a dominance of market logic taking over the private and public sphere, and rather than invariably increasing prosperity, gains that are distributed unevenly.

Under neoliberalism, flourishing forms of resistance in popular counter-movements “emerged as independent from states and with more of a focus on the forms of protest on collective consumption than on labour . . . [reacting] to the disruption of everyday life” (della Porta 2015, 46). These disruptions of the quotidian represent problematizations in the routines and habitudes that govern everyday lives (Borland 2013). What mobilizes participants is the perceived or expected loss of a previous condition and its moral implications, such as alterations of subsistence routines and changes in social organization and control (Germann Molz 2013; Snow and Soule 2010). The ongoing economic crises, the disappearance of social protection provided by the state and its failing social support systems, and the deterioration of other forms of the common good are ailing the already deprived, pauperized working class and the proletarianized middle class (see Calhoun 2013; della Porta 2015).

Disruption not only causes distress, but also agentic possibilities for rearranging social structures in order to denaturalize the dominant structure effectively. Here is where collective action comes in. Collective action constitute deliberate, continuous efforts outside of established political, economic, and social institutions in order to change (or maintain) a particular dominant social order (della Porta and Diani 2006; Snow 2004; Snow and Soule 2010). The sharing economy developed to revitalize and reinstitute forms of social solidarity and cooperation reminiscent of communities pre-dating the first great transformation (e.g., Eckhardt and Bardhi 2016; Frenken and Schor 2017; Laamanen et al. 2018a; Pais and Provasi 2015; Wahlen and Laamanen 2017). Then, lifestyle-based movements are located in the everyday, aiming for social change through aggregated individual action. Here, the targets of mobilized collective action have shifted from political to cultural and economic actors and change goals (Dubuisson-Quellier 2018; Haenfler et al. 2012; Snow 2004). As such, collective action in the sharing economy encompasses a significant number of individuals aiming at the disruption of the dominant economic system and the creation of a new one. These communities attempt to generate new forms of economic interaction and community sustenance in shared lifestyles and identities of collective action.

LIFESTYLES, COLLECTIVE IDENTITIES, AND COLLECTIVE ACTION

Collective action is rooted in issues or conditions with emotional and moral associations, shared among a sufficient number of people, and serious enough to call for action (Snow and Soule 2010). To be able to mobilize individuals, grievances need to be interpreted and communicated, that is, framed in connection to a larger set of values, beliefs, and cultural markers that challenge the dominant institutions. Collective action frames provide the interpretive schema for grievances: they “assign meaning to and interpret relevant events and conditions in ways that are intended to mobilize potential adherents and constituents, to garner bystander support, and to demobilize antagonists” (Snow and Benford 1988, 198). Frames clarify and substantiate identities in collective action as the “individual’s cognitive, moral, and emotional connection with a broader community, category, practice, or institution” (Polletta and Jasper 2001, 285) needed for recruitment and maintaining solidarity (Jasper 2014).

Beyond ideas, various resources need to be mobilized. Classical social movements secured resources through formal, hierarchical organizations typically based on understanding of Marxist class politics (e.g., Calhoun 1993). In contrast, new social movements emerged within capitalist welfare states as direct reactions to “postindustrialism, late modernity, advanced capitalism, or postmodernity” and the institutionalized “capitalist markets, bureaucratic states, scientized relationships, and instrumental rationality” (Buechler 2011, 159). In new social movements, the key mobilizing dimension is located in everyday life, lifestyles, and social reproduction, and identifications with race and ethnicity, sexual identities, environmental concerns, and countercultural beliefs. Socially and politically constructed collective identity coincides with the “fluidity and multiplicity of identities in late modernity” (Buechler 2011, 160), bridging between heterogeneous participation and the various personal needs of the participants (Melucci 1989).

A lifestyle is thus both material and symbolic, addressing the basic requirements of the individuals as well as signaling distinction and group membership. In this way, lifestyle connects agency and social structure. A lifestyle bridges between the private and public as well as the individual and collective; in the context of consumption, “building bonds of solidarity and cooperation among people, bonds which are a fundamental resource for collective action” (Forno and Graziano 2014, 145). Collective features of lifestyles denote both personal preferences (for example, taste, identity) as well as group-level institutions (such as beliefs, norms, and values). Participation in lifestyle movements is: “(1) relatively individualized and private, (2) on-going rather than episodic, and (3) aimed at changing cultural and economic practices rather than targeting the state” (Haenfler et al. 2012, 6). Given these characteristics, collective identity in lifestyle movements is a “resource and reference point for individuals as they craft morally coherent and meaningful personal identities” (Haenfler et al. 2012, 8). Lifestyle becomes political participation, and consumption an area of activism, resistance, and civic participation (Buechler 2011; de Moor 2017; Dobernig and Stagl 2015; Forno 2015; Halkier and Holm 2008; Portwood-Stacer 2013); personal identities, behaviors, and choices are harmonized towards a transformed ideal state, providing solutions to social problems to be enacted in private, public, and institutional settings.

The sharing economy is typically analyzed in individualized and commercialized terms.

For instance, beyond a homophilic identification (Ladegaard 2018), any feelings of community or solidarity are excluded; typically distinction building creates rifts between participants and varieties of exchange (Schor et al. 2016). Indeed, the we-ness in the sharing economy, while central to its assumptions, has not been central to its practice or analysis. Some recent studies have elaborated on collective identity and a shared moral fundament in the sharing economy context (Kornberger et al. 2018; Laamanen et al. 2018b). Using a lifestyle movements lens, we can further particularize on the we-ness of everyday resistance practices, which is what we turn to next.

RESISTANCE IN THE EVERYDAY AND THE SHARING ECONOMY

In the sharing economy, participants allow others to have access to (that is, share) physical space, mobility and transport, commodities, time and skills, as well as money to solve immediate problems. At their core, ridesharing to get from A to B, or communal trading of scarce resources, are satisfying needs and necessities rather than aiming at broader social change. Practices of sharing relate to the improvement of immediate daily lives of consumers. Practices and routines provide the space and time for everyday consumption (Wahlen 2011; Warde 2005). Routines consist of mundane “objects and actions where there are no alternatives (for example, infrastructure), where there is no social distinction to harvest (for example, washing powder), where actions are heavily habituated and conventionalized” (Jacobsen and Dulsrud 2007, 477). Intentionality embedded in routines may focus on the satisfaction of needs and necessities whereby collaborative consumption may remain individualized without the aim of political change (cf. Halkier and Holm 2008).

Nevertheless, political change needs to be rooted in everyday life. To Lefebvre (2014), the everyday is an expression of, and a place in, politics and the economy. Resistance comes across in opposition to a hegemonic and individualistic lifestyle; and in a praxeological understanding of the everyday, sharing becomes resistance when consumers on a broader scale try to “withstand and respond to undesired market discourses and practices” (Moraes et al. 2010, 274). This resistance has “on the one hand spatial, temporal and praxeological relevance and . . . on the other hand . . . [a] collective, contentious and ideological nature” (Wahlen and Laamanen 2015, 398). The way in which lifestyle movement becomes manifested in the practices of the sharing economy requires considering what makes the resistance practice collective. In what follows, we illustrate three general themes in collective resistance practices in the everyday sharing economy context, namely: (1) localization; (2) ideology and meaning creation; and (3) forms of organizing. As we discuss these in detail below, it is worth bearing in mind that these practices are interdependent and overlapping.

Sharing as enacted resistance is bound to spaces and temporalities of the everyday life. Collective resistance practices in the sharing economy are connected to particular localities. The economization of social relations ingrained in neoliberalism turns a blind eye to private, collaborative relations among family, neighborhoods, and the community. Recent research drawing on the Polanyian concept of householding elaborates on communities creating self-sufficiency and autonomy from the mainstream economy by providing for themselves in reciprocal relations (Sahakian 2017; Laamanen et al. 2018b). Where historically householding was considered to relate only to closed communities in agrarian and semi-industrialized settings, digital networked and platform-aided social interaction in the sharing economy can extend the spatial reach of the concept beyond physical spaces. For instance, sharing food in urban food commons (Morrow 2019) exemplifies how localities are of specific relevance for how the movement unfolds and connects its various participants. The places of exchange and the types of physical and digital networks in the sharing economy can be understood as social movement spaces (Nicholls 2009) that combine kin and stranger.

Communities are also institutional domains that create and carry ideologies and meaning upon which collective identities are built. Values, beliefs, and norms in lifestyles question normative ideologies (Laamanen et al. 2018b; Parker and Morrow 2017) and, in turn, generate their own alternatives. For instance, communities of sustainability in consumer lifestyles engender activism in opposition to the economic growth paradigm and social injustice associated with the prevailing capitalist economic system (Morrow 2019). Mobilization further draws on meaning in everyday experiences. For instance, mobilizing collective action frames illustrate problems that connect the participants and incite action to challenge status quo, that is, the structuring of exchanges and the economy in the everyday. Martin (2016) explains how various frames, both for and against, are mobilized in the sharing economy. These draw on either the opportunities for sustainability in and around the economy and consumption, or against the fortification neoliberalism through unregulated marketplaces. Frames make sense of and mobilize participants to join and maintain their supply of resources to the sharing economy as a whole and various initiatives in particular.

Laamanen et al. (2015) elaborate how mobilizing collective action frames are used by community exchange networks of timebanks. These lifestyle movement initiatives problematize the monetized market system and the transmuting power between the state and the market as the root causes for needing new forms of everyday sustenance. Subsequently, timebanks offer remedial strategies through which community co-production creates pools of transferable skills and resources in a democratic process that ultimately generates lasting institutions in the new economy (Laamanen et al. 2015). The ultimate motivation is to bring about “a paradigm change for a democratic society” with “personal lifestyles . . . transformed and enhanced” in communal exchange (Laamanen et al. 2015, 465). Similarly, the sharing of food to avoid food waste promotes alternative action frames that shifts the perspective away from the market in support of a communal production, consumption, and ownership perspective (Morrow 2019).

Yet, lifestyle identity politics are challenging as they may simultaneously dictate community obligations as well as delineate subgroup distinctions. Participants may identify with a global movement rather than any particular group, or they may feel strongly about their community but ignore the larger field of these organizations (Flesher Fominaya 2010). To exemplify, Lichterman (1996) recounts how green political groups advocated strongly for certain diets as the moral obligation of community members. Bertella (2018) demonstrates this with the empirical example of vegetarianism which, understood as a lifestyle (movement), opposes the mainstream food system, while the lifestyle movement also involves various subgroups such as flexitarians (Bertella 2018). Related to the sharing economy, consumers may not necessarily prefer Uber over a taxi because of the system behind it, but rather because of convenience and fit within their daily practices. Yet, use of certain types of sharing economy platforms can carry moral obligations to the community, which ultimately render certain choices unavailable.

If a lifestyle connects and mobilizes individuals in and beyond their individual actions, then resistance is not only a reaction to “the market,” to consume or not to consume, but also includes pre-emptive ways of gaining power and/or emancipation from neoliberal corporate and political authorities. Here the key challenges relate to how mobilization actually becomes organized. Lifestyles are enacted mainly in private, and related to the continuity of identity and action, with potential ephemeral bursts of protest or other demonstrative forms of visible collective action. As such, similar to new social movements, in general, lifestyle mobilization is founded on the periodicity of latency and resistance. In social movement studies, Melucci (1996) claimed that during latency (that is, lack of visible activity), movements construct views on a new utopian reality, which become visible when they are confronted directly by the dominant ideologies, such as the beliefs and practices of the neoliberal politico-economic system. Latency and the visibility of a lifestyle movement mobilization is the visible collective expression of the movement divorced from the everyday individual practice. Haenfler et al. (2013, 13) see lifestyle movements as:

collective action reservoirs, pools of potential participants whose collective value identities make them an ideal “reserve guard” ready to periodically support particular protest events and mobilizations . . . LM [lifestyle movement] participants may be occasional/temporary activists . . . oriented toward individual efforts at cultural change, driven especially by a desire to live out a moral identity or code.

Individually performed everyday resistance coincides with the collective organizing of collaboration and mobilization drawing on the everyday as an enabling condition (Melucci 1996).

In the commercial sharing economy, platforms organize and govern both the people and processes taking place on them: proprietorship extends beyond the exchangemediating function of the platform, to governing people’s behaviors (even without formal contracts, such as for employment) and processes (for example, access with regard to place, time, and availability; see Purnhagen and Wahlen 2017). Arvidsson (2018) has argued that social movement activism in the sharing economy is extending political impact via entrepreneurial means. This assertion mirrors the classical professionalization argument of McCarthy and Zald (1977). They state that successful movements depend on the availability of resources, formal organization, and movement entrepreneurs to maintain and manipulate action. Thus, maintaining political pressure in consumption relies on “signalling activities of SMOs [social movement organizations] that let individual consumption choices appear as a form of collective action [while] political consumerism remains based on a myriad of individual decisions that observers in and of the market can understand as some kind of collective statement of purpose” (Holzer 2006, 413).

To Slee (2015), the manipulation of meaning starts with the businesses that frame themselves as social movements: he illustrates how social movement framing was utilized by corporate platforms to present themselves as harbingers of progress, while actually building in “a movement for deregulation” of the market (Slee 2015, 51). Similarly, Dubuisson-Quellier (2013) has demonstrated how corporations revamped social movement tactics to market devices: for instance, companies take up claims promoted by the environmental movement to create new business ventures. Indeed, individual consumers may be recruited to participate in sharing economy activism to oppose the persistent growth (pro-sustainability) and injustice (pro-social justice) associated with the prevailing capitalist economic system but become pawns as resources for capitalistic renewal (see Dubuisson-Quellier 2015).

As illustrated above, lifestyle movements share the traditions of new social movements (e.g., Haenfler 2013). They search for ways to organize communities and ultimately society in a more inclusive and democratic manner by reclaiming and nurturing common resources, building forms of joint ownership and governance, and reclaiming power from oppressive technologies and ownership structures. Drawing on ideological practice renders everyday action prefigurative, both in terms of creating interdependencies between the organization of production, consumption, and disposal, as well as in relation to community governance (de Bakker et al. 2017; della Porta 2015; Haenfler et al. 2012; Laamanen et al. 2019; Yates 2015). To counter the problems pertaining to representation, slow-moving structures, and the elitist governance of old social movements, contemporary movements highlight democratic participation, organizational experimentation, and autonomy in their activities (e.g., de Bakker et al. 2017; Buechler 2011).

The prefigurative ideal asserts a moral conviction of democracy, whereby individual and collective actions are inherently part of the change and future of the movement: there is no separation between means and ends, whereby the future of democratic participation and resource-sharing cannot be achieved by force or oligarchic decision-making mechanisms. Moralities delineate community boundaries through communicative and connective technologies in conjunction with strategies and mechanisms for self-organizing and collective governance of resources (e.g., Laamanen et al. 2019; Laamanen et al. 2018b; Morrow 2019; Rowe 2017). This is necessary, as in the sharing economy, older forms of collective representation through mechanisms similar to trade unionism or consumer associations that democratize questions of ownership, distribution, and governance have proven highly problematic (see Schor 2014; Laamanen et al. 2018a).

CONCLUDING THOUGHTS

The way in which lifestyle movements challenge particular hegemonic ways of the mainstream economy is not unavoidably grounded in the idea of opposing neoliberalism, but a reaction to the changing immediate contexts and consequences caused by it. This chapter started with the question of how collective lifestyles and identity enable resistance practice in the sharing economy. By anchoring our perspective with lifestyle movements, we scrutinize the extent to which lifestyle movements in the sharing economy may engender collective action for an emancipatory, participatory, and more sustainable sharing economy. This stands in stark contrast to the dominant neoliberal sharing economy on commercial platforms.

The current literature emphasizes the nature of the sharing economy as individualized and commercialized. While this is certainly one part of the story, accepting this as the full picture of the phenomenon would denote turning a blind eye to the variety of radical interaction within the sharing economy. Similarly, though communality and non-commercialized relationships were central to the origins of the sharing economy literature, we-ness in the sharing economy has not been central to its analysis.

From this perspective, what relocalization, rehumanization, and recommunalization requires is a focus on everyday collective actions in the sharing economy. This is where the contribution of this chapter and our focus on everyday collective lifestyles and identity in resisting neoliberalization comes in. The lifestyle movement approach holds that consumers’ collective action enables resistance in the sharing economy (Wahlen and Laamanen 2015), while taking note that action is contained mainly within the private context. Lifestyle is a basis to understanding the ongoing conflicts between traditional and newer forms of community as well as a building block of collective identity. Similarly, instead of demonstrations and street protest, the “banality” of everyday lifestyles becomes central to the politics enacted and imagined by those activists and participants constructing utopian futures in the sharing economy beyond profit maximization.

As we have elaborated, neoliberalism exists in a dialectic relationship with sharing economy lifestyle movements. The collective resistance practices build on localizing, identities and meaning, and forms of organizing. These may render the communities and their practices low-visibility in comparison to the commercial sharing economy; yet, it does allow what the commercial sharing economy clearly fails to do, namely, propagate democratic participation on a local level for the collective good. Low visibility also stands testament to the assumptions of lifestyle politics in new social movements of the sharing economy. The submerged networks of exchange of individually performed everyday resistance and community organizing—through the generation of values and frames—are easy to dismiss as non-existent and tangential as they only emerge from latency when confronted with dominant ideologies. When the lifestyle politics of the sharing economy movements challenge the current legal systems by blurring the traditional distinctions between producer and consumer roles (Purnhagen and Wahlen 2017), or in other ways challenge the neoliberal political economy, a reaction from dominant institutions becomes eminent (see also Laamanen et al. 2019).

Beyond contesting, consumer activity may reproduce normative practices. The debate on the impact of local communities to well-being and on the sharing economy is still unresolved. The sharing economy may indeed work for the benefit of the dominant market actors in continuing oppression when the social movement initiatives of the sharing economy are “doomed” to latent activity. Whether working within and parallel to the dominant system subverts energy from actual systemic change remains to be shown in an empirical examination of the systemic collective action of lifestyle movements. However, moving on from individualist accounts and the acceptance of the sharing economy as only a reification of commercial interest is the initial step towards a consideration of the sharing economy as a locus where social and economic experimentation advances local sufficiency, autonomy, and thriving. Collective lifestyles and identity can serve as an entry point to future investigation of the “misnomer” of the sharing economy. As such, resistance to dominant systems is not to be found in the overt protest, but in the very specificity of the ordinary and its various practices advancing societal, sustainable transformations.

#### It is the only way to transition to sustainability without social turmoil.

Paul Mason 15, writer and broadcaster on economics and social justice, visiting professor at the University of Wolverhampton, “Introduction,” PostCapitalism: A Guide to Our Future, Allen Lane, an imprint of Penguin Books, 2015, pp. 6–17

What started in 2008 as an economic crisis morphed into a social crisis, leading to mass unrest; and now, as revolutions turn into civil wars, creating military tension between nuclear superpowers, it has become a crisis of the global order.

There are, on the face of it, only two ways it can end. In the first scenario, the global elite clings on, imposing the cost of crisis on to workers, pensioners and the poor over the next ten or twenty years. The global order – as enforced by the IMF, World Bank and World Trade Organisation – survives, but in a weakened form. The cost of saving globalization is borne by the ordinary people of the developed world. But growth stagnates.

In the second scenario, the consensus breaks. Parties of the hard right and left come to power as ordinary people refuse to pay the price of austerity. Instead, states then try to impose the costs of the crisis on each other. Globalization falls apart, the global institutions become powerless and in the process the conflicts that have burned these past twenty years – drug wars, post-Soviet nationalism, jihadism, uncontrolled migration and resistance to it – light a fire at the centre of the system. In this scenario, lip-service to international law evaporates; torture, censorship, arbitrary detention and mass surveillance become the regular tools of statecraft. This is a variant of what happened in the 1930s and there is no guarantee it cannot happen again.

In both scenarios, the serious impacts of climate change, demographic ageing and population growth kick in around the year 2050. If we can’t create a sustainable global order and restore economic dynamism, the decades after 2050 will be chaos.

So I want to propose an alternative: first, we save globalization by ditching neoliberalism; then we save the planet – and rescue ourselves from turmoil and inequality – by moving beyond capitalism itself.

Ditching neoliberalism is the easy part. There’s a growing consensus among protest movements, radical economists and radical political parties in Europe as protest movements, radical economists and radical political parties in Europe as to how you do it: suppress high finance, reverse austerity, invest in green energy and promote high-waged work.

But then what?

As the Greek experience demonstrates, any government that defies austerity will instantly clash with the global institutions that protect the 1 per cent. After the radical left party Syriza won the election in January 2015, the European Central Bank, whose job was to promote the stability of Greek banks, pulled the plug on those banks, triggering a €20 billion run on deposits. That forced the left-wing government to choose between bankruptcy and submission. You will find no minutes, no voting records, no explanation for what the ECB did. It was left to the right-wing German newspaper Stern to explain: they had ‘smashed’ Greece.3 It was done, symbolically, to reinforce the central message of neoliberalism that there is no alternative; that all routes away from capitalism end in the kind of disaster that befell the Soviet Union; and that a revolt against capitalism is a revolt against a natural and timeless order.

The current crisis not only spells the end of the neoliberal model, it is a symptom of the longer-term mismatch between market systems and an economy based on information. The aim of this book is to explain why replacing capitalism is no longer a utopian dream, how the basic forms of a postcapitalist economy can be found within the current system, and how they could be expanded rapidly.

Neoliberalism is the doctrine of uncontrolled markets: it says that the best route to prosperity is individuals pursuing their own self-interest, and the market is the only way to express that self-interest. It says the state should be small (except for its riot squad and secret police); that financial speculation is good; that inequality is good; that the natural state of humankind is to be a bunch of ruthless individuals, competing with each other.

Its prestige rests on tangible achievements: in the past twenty-five years, neoliberalism has triggered the biggest surge in development the world has ever seen, and it unleashed an exponential improvement in core information technologies. But in the process, it has revived inequality to a state close to that of 100 years ago and has now triggered a survival-level event.

The civil war in Ukraine, which brought Russian special forces to the banks of the Dniestr; the triumph of ISIS in Syria and Iraq; the rise of fascist parties in the Dniestr; the triumph of ISIS in Syria and Iraq; the rise of fascist parties in Europe; the paralysis of NATO as its populations withhold consent for military intervention – these are not problems separate from the economic crisis. They are signs that the neoliberal order has failed.

Over the past two decades, millions of people have resisted neoliberalism but in general the resistance failed. Beyond all the tactical mistakes, and the repression, the reason is simple: free-market capitalism is a clear and powerful idea, while the forces opposing it looked like they were defending something old, worse and incoherent.

Among the 1 per cent, neoliberalism has the power of a religion: the more you practise it, the better you feel – and the richer you become. Even among the poor, once the system was in full swing, to act in any other way but according to neoliberal strictures became irrational: you borrow, you duck and dive around the edges of the tax system, you stick to the pointless rules imposed at work.

And for decades the opponents of capitalism have revelled in their own incoherence. From the anti-globalization movement of the 1990s through to Occupy and beyond, the movement for social justice has rejected the idea of a coherent programme in favour of ‘One No, Many Yes-es’. The incoherence is logical, if you think the only alternative is what the twentieth century left called ‘socialism’. Why fight for a big change if it’s only a regression – towards state control and economic nationalism, to economies that work only if everyone behaves the same way or submits to a brutal hierarchy? In turn, the absence of a clear alternative explains why most protest movements never win: in their hearts they don’t want to. There’s even a term for it in the protest movement: ‘refusal to win’.4

To replace neoliberalism we need something just as powerful and effective; not just a bright idea about how the world could work but a new, holistic model that can run itself and tangibly deliver a better outcome. It has to be based on micro-mechanisms, not diktats or policies; it has to work spontaneously. In this book, I make the case that there is a clear alternative, that it can be global, and that it can deliver a future substantially better than the one capitalism will be offering by the mid-twenty-first century.

It’s called postcapitalism.

Capitalism is more than just an economic structure or a set of laws and institutions. It is the whole system – social, economic, demographic, cultural, ideological – needed to make a developed society function through markets and private ownership. That includes companies, markets and states. But it also includes criminal gangs, secret power networks, miracle preachers in a Lagos slum, rogue analysts on Wall Street. Capitalism is the Primark factory that collapsed in Bangladesh and it is the rioting teenage girls at the opening of the Primark store in London, overexcited at the prospect of bargain clothes.

By studying capitalism as a whole system, we can identify a number of its fundamental features. Capitalism is an organism: it has a lifecycle – a beginning, a middle and an end. It is a complex system, operating beyond the control of individuals, governments and even superpowers. It creates outcomes that are often contrary to people’s intentions, even when they are acting rationally. Capitalism is also a learning organism: it adapts constantly, and not just in small increments. At major turning points, it morphs and mutates in response to danger, creating patterns and structures barely recognizable to the generation that came before. And its most basic survival instinct is to drive technological change. If we consider not just info-tech but food production, birth control or global health, the past twenty-five years have probably seen the greatest upsurge in human capability ever. But the technologies we’ve created are not compatible with capitalism – not in its present form and maybe not in any form. Once capitalism can no longer adapt to technological change, postcapitalism becomes necessary. When behaviours and organizations adapted to exploiting technological change appear spontaneously, postcapitalism becomes possible.

That, in short, is the argument of this book: that capitalism is a complex, adaptive system which has reached the limits of its capacity to adapt.

This, of course, stands miles apart from mainstream economics. In the boom years, economists started to believe the system that had emerged after 1989 was permanent – the perfect expression of human rationality, with all its problems solvable by politicians and central bankers tweaking control dials marked ‘fiscal and monetary policy’.

When they considered the possibility that the new technology and the old forms of society were mismatched, economists assumed society would simply remould itself around technology. Their optimism was justified because such adaptations have happened in the past. But today the adaptation process is adaptations have happened in the past. But today the adaptation process is stalled.

Information is different from every previous technology. As I will show, its spontaneous tendency is to dissolve markets, destroy ownership and break down the relationship between work and wages. And that is the deep background to the crisis we are living through.

If I am right we have to admit that for most of the past century the left has misunderstood what the end of capitalism would look like. The old left’s aim was the forced destruction of market mechanisms. The force would be applied by the working class, either at the ballot box or on the barricades. The lever would be the state. The opportunity would come through frequent episodes of economic collapse. Instead, over the past twenty-five years, it is the left’s project that has collapsed. The market destroyed the plan; individualism replaced collectivism and solidarity; the massively expanded workforce of the world looks like a ‘proletariat’, but no longer thinks or behaves purely as one.

If you lived through all this, and hated capitalism, it was traumatic. But in the process, technology has created a new route out, which the remnants of the old left – and all other forces influenced by it – have either to embrace or die.

Capitalism, it turns out, will not be abolished by forced-march techniques. It will be abolished by creating something more dynamic that exists, at first, almost unseen within the old system, but which breaks through, reshaping the economy around new values, behaviours and norms. As with feudalism 500 years ago, capitalism’s demise will be accelerated by external shocks and shaped by the emergence of a new kind of human being. And it has started.

Postcapitalism is possible because of three impacts of the new technology in the past twenty-five years.

First, information technology has reduced the need for work, blurred the edges between work and free time and loosened the relationship between work and wages.

Second, information goods are corroding the market’s ability to form prices correctly. That is because markets are based on scarcity while information is abundant. The system’s defence mechanism is to form monopolies on a scale not seen in the past 200 years – yet these cannot last.

Third, we’re seeing the spontaneous rise of collaborative production: goods, services and organizations are appearing that no longer respond to the dictates of services and organizations are appearing that no longer respond to the dictates of the market and the managerial hierarchy. The biggest information product in the world – Wikipedia – is made by 27,000 volunteers, for free, abolishing the encyclopaedia business and depriving the advertising industry of an estimated $3 billion a year in revenue.

Almost unnoticed, in the niches and hollows of the market system, whole swathes of economic life are beginning to move to a different rhythm. Parallel currencies, time banks, cooperatives and self-managed spaces have proliferated, barely noticed by the economics profession, and often as a direct result of the shattering of old structures after the 2008 crisis.

New forms of ownership, new forms of lending, new legal contracts: a whole business subculture has emerged over the past ten years, which the media has dubbed the ‘sharing economy’. Buzzterms such as the ‘commons’ and ‘peer- production’ are thrown around, but few have bothered to ask what this means for capitalism itself.

I believe it offers an escape route – but only if these micro-level projects are nurtured, promoted and protected by a massive change in what governments do. This must in turn be driven by a change in our thinking about technology, ownership and work itself. When we create the elements of the new system we should be able to say to ourselves and others: this is no longer my survival mechanism, my bolt-hole from the neoliberal world, this is a new way of living in the process of formation.

In the old socialist project, the state takes over the market, runs it in favour of the poor instead of the rich, then moves key areas of production out of the market and into a planned economy. The one time it was tried, in Russia after 1917, it didn’t work. Whether it could have worked is a good question, but a dead one.

Today the terrain of capitalism has changed: it is global, fragmentary, geared to small-scale choices, temporary work and multiple skill-sets. Consumption has become a form of self-expression – and millions of people have a stake in the finance system that they did not have before.

With the new terrain, the old path is lost. But a different path has opened up. Collaborative production, using network technology to produce goods and services that work only when they are free, or shared, defines the route beyond the market system. It will need the state to create the framework, and the postcapitalist sector might coexist with the market sector for decades. But it is postcapitalist sector might coexist with the market sector for decades. But it is happening.

Networks restore ‘granularity’ to the postcapitalist project; that is, they can be the basis of a non-market system that replicates itself, which does not need to be created afresh every morning on the computer screen of a commissar.

The transition will involve the state, the market and collaborative production beyond the market. But to make it happen, the entire project of the left, from the protest groups to mainstream social-democratic and liberal parties, has to be reconfigured. In fact, once people understand the urgency of this postcapitalist project, it’s no longer the property of the left, but of a much wider movement, for which we will probably need new labels.

### Perm---AT: Sharing Economy Links---Ext

#### Perm do both.

#### 1---It doesn’t compete based on the plan. We can provide a job guarantee AND [ALT]. If the ALT can overcome squo resistance, the AFF can’t coopt it.

#### 2---The 1AC’s political project is both compatible with and necessary for the ALT by enabling the emergence of the sharing economy. The sharing economy promotes lifestyle changes that radically alter the way people view property and consumption, and promotes collectivity and cooperation with others. That has a few net benefits:

#### a) Leads to anti-capital movements. Sharing is resistance to dominant neoliberal modes of production. Political change needs to be rooted in everyday life---transitions won’t succeed if people can’t imagine their lives outside of capitalism. Sharing enables imagination and construction of utopian futures by participants.

#### b) Counters anti-neoliberal ideology. Sharing economy platforms displace neoliberal ideology by inculcating values, beliefs, and norms of collectivity.

#### That’s Laamanen and Wahlen.

#### The perm wins under their framework, too. The ideological discourse of our defense of the sharing economy makes the 1AC’s political project worth including.

Juliet B. Schor & Steven P. Vallas 21, Schor is economist and Sociology Professor at Boston College, Vallas is Professor of Sociology at Northeastern University in Boston, “The Sharing Economy: Rhetoric and Reality,” Annual Review of Sociology, 2021. 47:369–89, https://www.annualreviews.org/doi/pdf/10.1146/annurev-soc-082620-031411

Platform Cooperativism

While there is ample evidence to support the foregoing pessimistic view on the sharing economy, recent developments may be creating new openings for change. As the world faces pandemic and economic catastrophe, postcapitalist discourses are increasingly compelling. In the USA, the epicenter of the tech sector, a rising tide of activism and protest on racial, climate, and economic justice is shifting the policy conversation to the left. These movements align in important ways with the aspirations of early sharing-economy advocates, who aimed to transcend conventional market principles and create an egalitarian, communal, and sustainable alternative to capitalism (Scholz & Schneider 2016, Schneider 2018). The increasingly predatory and antisocial actions of the large platforms have led to renewed efforts to chart a new direction in which sharing technologies are retained but the social and economic models of the corporate apps are transformed. These alternate structures include worker-owned platforms, cashless for-profits, and the many types of community sharing entities that have developed in the last 10 years.

The idea that has attracted the most attention is probably the platform cooperative, which retains the digital features of sharing platforms but is owned by earners. Early advocates such as Trebor Scholz, Nathan Schneider, and Janelle Orsi have been developing infrastructure and networks to support the formation of these entities (Scholz & Schneider 2016, Schneider 2018). One of the earliest, Stocksy United, a stock photography co-op, achieved financial success early and has developed an admirable record of high remuneration and satisfaction for its artists (Sulakshana et al. 2018). SMart, a European freelancers’ cooperative, has more than 35,000 members and continues to expand (Charles et al. 2020). An alternative to Airbnb called Fairbnb plans to donate revenue to the communities it operates in, but the pandemic has hampered its expansion (Foramitti et al. 2020). Smaller co-ops offering local services include a ride-hail co-op in Colorado as well as Up & Go, a New York City cleaning co-op for immigrant women. Platform cooperatives have unique challenges, such as the fact that work performed is typically individualized, which leads to unequal earnings distributions (Schor et al. 2020) or, in some cases, a globally dispersed workforce. Furthermore, successful offline cooperatives are often buoyed by preexisting forms of occupational community, such as those formed among bicycle couriers, artists, photographers, programmers, and other creative class workers, or in some cases by solidary ties among immigrant groups. It remains unclear whether cooperatives can be sustainable in the absence of such bonds. The Fairbnb study reveals that managing the loci of governance and control is complex, and the ecological impacts of its model are also a challenge. A study of Freegle, a UK breakaway from the donation platform Freecycle, which has instituted democratic governance, found that it has been successful despite tensions between funders and participants (Martin et al. 2017). However, the authors of this study note the relevance of their case for smaller groups of breakaways from large platforms. Van Doorn (2017) cautions that this movement can lapse into “technological solutionism,” with insufficient attention paid to issues of racism and sexism, as well as to the state, which is a necessary actor to achieve the aims of a true sharing economy. While cooperatives are a promising alternative to predatory platforms, they have also failed to scale in comparison to well-funded corporate entities.

CONCLUSION

When it launched, many believed that the sharing economy prefigured an alternative form of economic practice to neoliberal capitalism. But the power of that system has all but overwhelmed it. The growth of giant “sharing” firms has cast doubt on the status of its utopian rhetoric. Its claims of generating greater inclusivity and an ethos steeped in mutuality have been contradicted by evidence demonstrating its tendency to reinscribe social inequalities through digital means. Its ability to generate trust among strangers has been revealed to be complex. And expectations of environmental sustainability have been undermined by increasing evidence of its contributions to carbon emissions and other pollutants. These considerations challenge the aspirations that have driven the sharing economy from its very beginning. Yet arguably, the most pronounced challenge to a genuine sharing economy may be an exogenous one: the COVID-19 pandemic that has swept across the globe. This is not to say that the large, for-profit firms cannot adjust. They are nothing if not flexible, consisting of technology rather than physical capital. They can shift their focus nimbly, as Uber has redirected its efforts from ride hailing to food delivery, and will likely survive the pandemic. But the threats to smaller sites specializing in face-to-face community are different. These progenitors of the sharing economy envisioned a form of consumption that transcends capitalism’s long-standing emphasis on property ownership and individual ownership of goods. That vision has been seriously challenged by the advent of a pandemic that has transformed the sharing of goods and services into a source of fear and dread rather than mutuality and reciprocity. As social contact has become perilous, and strangers have become sources of potential infection, people may well shun the kinds of physical connections that are the foundation of the sharing economy. But if societies are to survive the existential threats posed not only by the pandemic but also by the climate and financial crises, they will need to reclaim the fundamental values of true sharing economies—ensuring the safety and security of all in a spirit of reciprocity and generosity. For surely the other way lies barbarism.

#### 3---ALT fails without the AFF: the sharing economy is the only viable theory of transition---the ALT’s change agents are empirically ineffective, coopted by authoritarianism, and cause global war. Economic crisis and forcing rapid social change causes torture, mass surveillance, lashout, terrorism, and nuclear conflict. Capitalism is a powerful ideology, which means we have to use the state to rework markets. Sharing economy models end capitalism from within. That’s Mason.

#### Building P2P networks within the system is key to imagine and implement a successful post-capital transition.

Paul Mason 15, writer and broadcaster on economics and social justice, visiting professor at the University of Wolverhampton, “The end of capitalism has begun,” The Guardian, 7/17/15, https://www.theguardian.com/books/2015/jul/17/postcapitalism-end-of-capitalism-begun

This will be more than just an economic transition. There are, of course, the parallel and urgent tasks of decarbonising the world and dealing with demographic and fiscal timebombs. But I’m concentrating on the economic transition triggered by information because, up to now, it has been sidelined. Peer-to-peer has become pigeonholed as a niche obsession for visionaries, while the “big boys” of leftwing economics get on with critiquing austerity.

In fact, on the ground in places such as Greece, resistance to austerity and the creation of “networks you can’t default on” – as one activist put it to me – go hand in hand. Above all, postcapitalism as a concept is about new forms of human behaviour that conventional economics would hardly recognise as relevant.

So how do we visualise the transition ahead? The only coherent parallel we have is the replacement of feudalism by capitalism – and thanks to the work of epidemiologists, geneticists and data analysts, we know a lot more about that transition than we did 50 years ago when it was “owned” by social science. The first thing we have to recognise is: different modes of production are structured around different things. Feudalism was an economic system structured by customs and laws about “obligation”. Capitalism was structured by something purely economic: the market. We can predict, from this, that postcapitalism – whose precondition is abundance – will not simply be a modified form of a complex market society. But we can only begin to grasp at a positive vision of what it will be like.

I don’t mean this as a way to avoid the question: the general economic parameters of a postcapitalist society by, for example, the year 2075, can be outlined. But if such a society is structured around human liberation, not economics, unpredictable things will begin to shape it.

For example, the most obvious thing to Shakespeare, writing in 1600, was that the market had called forth new kinds of behaviour and morality. By analogy, the most obvious “economic” thing to the Shakespeare of 2075 will be the total upheaval in gender relationships, or sexuality, or health. Perhaps there will not even be any playwrights: perhaps the very nature of the media we use to tell stories will change – just as it changed in Elizabethan London when the first public theatres were built.

Think of the difference between, say, Horatio in Hamlet and a character such as Daniel Doyce in Dickens’s Little Dorrit. Both carry around with them a characteristic obsession of their age – Horatio is obsessed with humanist philosophy; Doyce is obsessed with patenting his invention. There can be no character like Doyce in Shakespeare; he would, at best, get a bit part as a working-class comic figure. Yet, by the time Dickens described Doyce, most of his readers knew somebody like him. Just as Shakespeare could not have imagined Doyce, so we too cannot imagine the kind of human beings society will produce once economics is no longer central to life. But we can see their prefigurative forms in the lives of young people all over the world breaking down 20th-century barriers around sexuality, work, creativity and the self.

The feudal model of agriculture collided, first, with environmental limits and then with a massive external shock – the Black Death. After that, there was a demographic shock: too few workers for the land, which raised their wages and made the old feudal obligation system impossible to enforce. The labour shortage also forced technological innovation. The new technologies that underpinned the rise of merchant capitalism were the ones that stimulated commerce (printing and accountancy), the creation of tradeable wealth (mining, the compass and fast ships) and productivity (mathematics and the scientific method).

Present throughout the whole process was something that looks incidental to the old system – money and credit – but which was actually destined to become the basis of the new system. In feudalism, many laws and customs were actually shaped around ignoring money; credit was, in high feudalism, seen as sinful. So when money and credit burst through the boundaries to create a market system, it felt like a revolution. Then, what gave the new system its energy was the discovery of a virtually unlimited source of free wealth in the Americas.

A combination of all these factors took a set of people who had been marginalised under feudalism – humanists, scientists, craftsmen, lawyers, radical preachers and bohemian playwrights such as Shakespeare – and put them at the head of a social transformation. At key moments, though tentatively at first, the state switched from hindering the change to promoting it.

Today, the thing that is corroding capitalism, barely rationalised by mainstream economics, is information. Most laws concerning information define the right of corporations to hoard it and the right of states to access it, irrespective of the human rights of citizens. The equivalent of the printing press and the scientific method is information technology and its spillover into all other technologies, from genetics to healthcare to agriculture to the movies, where it is quickly reducing costs.

The modern equivalent of the long stagnation of late feudalism is the stalled take-off of the third industrial revolution, where instead of rapidly automating work out of existence, we are reduced to creating what David Graeber calls “bullshit jobs” on low pay. And many economies are stagnating.

The equivalent of the new source of free wealth? It’s not exactly wealth: it’s the “externalities” – the free stuff and wellbeing generated by networked interaction. It is the rise of non-market production, of unownable information, of peer networks and unmanaged enterprises. The internet, French economist Yann Moulier-Boutang says, is “both the ship and the ocean” when it comes to the modern equivalent of the discovery of the new world. In fact, it is the ship, the compass, the ocean and the gold.

The modern day external shocks are clear: energy depletion, climate change, ageing populations and migration. They are altering the dynamics of capitalism and making it unworkable in the long term. They have not yet had the same impact as the Black Death – but as we saw in New Orleans in 2005, it does not take the bubonic plague to destroy social order and functional infrastructure in a financially complex and impoverished society.

Once you understand the transition in this way, the need is not for a supercomputed Five Year Plan – but a project, the aim of which should be to expand those technologies, business models and behaviours that dissolve market forces, socialise knowledge, eradicate the need for work and push the economy towards abundance. I call it Project Zero – because its aims are a zero-carbon-energy system; the production of machines, products and services with zero marginal costs; and the reduction of necessary work time as close as possible to zero.

Most 20th-century leftists believed that they did not have the luxury of a managed transition: it was an article of faith for them that nothing of the coming system could exist within the old one – though the working class always attempted to create an alternative life within and “despite” capitalism. As a result, once the possibility of a Soviet-style transition disappeared, the modern left became preoccupied simply with opposing things: the privatisation of healthcare, anti-union laws, fracking – the list goes on.

If I am right, the logical focus for supporters of postcapitalism is to build alternatives within the system; to use governmental power in a radical and disruptive way; and to direct all actions towards the transition – not the defence of random elements of the old system. We have to learn what’s urgent, and what’s important, and that sometimes they do not coincide.

...

The power of imagination will become critical. In an information society, no thought, debate or dream is wasted – whether conceived in a tent camp, prison cell or the table football space of a startup company.

As with virtual manufacturing, in the transition to postcapitalism the work done at the design stage can reduce mistakes in the implementation stage. And the design of the postcapitalist world, as with software, can be modular. Different people can work on it in different places, at different speeds, with relative autonomy from each other. If I could summon one thing into existence for free it would be a global institution that modelled capitalism correctly: an open source model of the whole economy; official, grey and black. Every experiment run through it would enrich it; it would be open source and with as many datapoints as the most complex climate models.

The main contradiction today is between the possibility of free, abundant goods and information; and a system of monopolies, banks and governments trying to keep things private, scarce and commercial. Everything comes down to the struggle between the network and the hierarchy: between old forms of society moulded around capitalism and new forms of society that prefigure what comes next.

#### 4---The sharing economy disrupts hyper-consumption that drives capitalism---that mindset shift is necessary for transition.

Chris J. Martin 16, School of Environment, Education and Development, The University of Manchester, “The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism?,” Ecological Economics Volume 121, January 2016, Pages 149-159, https://www.sciencedirect.com/science/article/pii/S0921800915004711#!

1. Introduction

There is rapidly growing interest in the nature and impacts of the sharing economy amongst entrepreneurs, innovators, incumbent businesses, policy-makers, media commenters and academic researchers alike. Much of this interest arises from the Silicon Valley success stories of two sharing economy platforms: Airbnb, an online peer-to-peer platform which enables people to rent out residential accommodation, including their own homes, on a short term basis; and, Uber, an online peer-to-peer platform providing taxi and ‘ridesharing’ services. Both platforms have made the journey from an entrepreneurial start-up company to a multi-billion dollar international corporation in less than five years (Lashinsky, 2015, Konrad and Mac, 2014). However, the wider economic impacts of the sharing economy remain unclear, although PWC (2014) speculatively estimates that current global annual revenues are $15bn, potentially growing to $335bn by 2025. Amidst great commercial success, Airbnb and Uber have also faced considerable resistance and criticism for opening up unregulated peer-to-peer marketplaces with adverse social impacts (e.g. Schofield, 2014). Whilst, the concept of the sharing economy itself has been the subject of scathing critique; for example, Morozov (2013) argues that it is a form of “neo-liberalism on steroids” which commercialise aspects of life previously beyond the reach of the market.

Meanwhile, there is also considerable interest in the sharing economy as a means of promoting sustainable consumption practices. Heinrichs (2013: 228) has heralded the sharing economy as a “potential new pathway to sustainability”, whilst Botsman and Rogers (2010) argue that it will disrupt the unsustainable practices of hyper-consumption that drive capitalist economies. The latter's central argument is that the sharing economy enables a shift away from a culture where consumer's own assets (from cars to drills), toward a culture where consumers share access to assets. This shift is driven by internet peer-to-peer platforms which connect consumers and enable them to make more efficient use of underutilised assets. For example, peer-to-peer car sharing platforms (e.g. Easycar Club) enable individuals to directly rent their vehicles to others, hence enabling more efficient use of the underutilised vehicle stock. Furthermore, Botsman and Rogers (2010) argue that such peer-to-peer platforms promote more equitable and sustainable distribution of resources by reducing: the costs of accessing products and services; and, consumer demand for resources. For example, in the case of peer-to-peer car rental, the cost of rental is lower than the cost of car ownership, and rather than several people each owning a car they share access to a single car.

These contrasting and contradictory framings of the sharing economy are merely the tip of an iceberg; a transnational discourse participated in by a diverse cast of innovation actors (Stokes et al., 2014). However, there is common ground within this complex discourse, as many actors frame the sharing economy as a disruptive innovation that could transform market economies. Complex discourses and contradictory framings often surround innovations which seek to transform society and create a sustainable economy (e.g. Berg and Hukkinen, 2011). Hence, to better understand the sharing economy, and the surrounding discourse, I turn to the field of sustainability transitions (Markard et al., 2012, Smith et al., 2010). Where researchers have theorised how discursive strategies, including framing and narratives, are employed to shape the processes of innovation and social and technological transformation (Geels, 2014, Hermwille, 2015, Smith and Raven, 2012).

Applying a transitions perspective the sharing economy is conceptualised as a niche (Smith and Raven, 2012, Martin et al., 2015); a field of related innovations (i.e. sharing economy platforms) and the intermediaries who support and promote the development of these innovations (i.e. sharing economy advocates and investors). As the sharing economy niche develops, transitions theory posits that it may influence or even transform regimes (Geels, 2005); the prevailing socio-technical systems, such as the transport and tourism systems, which serve societal needs. Hence, in this paper, the sharing economy discourse is considered to be the public expression of the ideas which both give meaning to, and shape, a niche. Within this discourse I focus on the processes of framing (Snow and Benford, 1988, Steinberg, 1998). The deliberative, communicative processes through which niche and regime actors seek to position, mobilise a consensus around, and shape the development of, the sharing economy. Hence, I pose the research question: how is the sharing economy framed by niche and regime actors? To address this question I present an analysis of a sample of the online sharing economy discourse; identifying six framings which seek to empower and resist the development of the niche. Given the nascent state of the sharing economy literature (Martin et al., 2015), this analysis is offered in the hope that it will enable academic researchers to better position their work within the on-going and contradictory discourse. Furthermore, I hope to establish the sharing economy as a niche of empirical interest within the sustainability transitions literature. Whilst, also presenting findings that help practitioners and policy-makers to better understand the many faces of the sharing economy.

### Perm---AT: State Bad Links

#### Perm card---must be bottom up and top down

Matthias Schmelzer et al. 22, Matthias Schmelzer is Permanent Fellow at the DFG-Research Group "Post-Growth Societies" at the University of Jena and works at the Konzeptwerk Neue Ökonomie; Andrea Vetter is a transformation researcher, activist and journalist, using degrowth, commons and critical eco-feminism as tools; Aaron Vansintjan, holds an MSc in Natural Resource Sciences from McGill University and a BA in Philosophy with a Minor in Environment from McGill University, PhD candidate at the University of London, Birkbeck, “6. Making Degrowth Real,’” The Future Is Degrowth: A Guide to a World beyond Capitalism, Verso, 2022, pp. 14–229

Degrowth is a vision of social transformation that has never been realized: a conscious, radically democratic process of transforming society to create the conditions for a good life for all, by pulling the emergency brake and stepping out of the capitalist and growth-driven megamachine. Given this immense scale of the challenge, the discussion about the degrowth transformation is only in its infancy. Before we begin to discuss it, we need to acknowledge a tension that often seems to underlie this discussion. On the one hand, degrowth is often proposed as a platform of relatively concrete top-down policy proposals, such as shortening working hours, establishing basic and maximum incomes, or setting upper limits on resource consumption. Even if there are ways that this ‘revolutionary realpolitik’ can be carried out by organizations or municipalities, the idea is that these reforms should ultimately be implemented ‘from above’ by the state, or fought for through the state by social movements and parties. On the other hand, however, degrowth is just as equally characterized by a strong focus on bottom-up, small-scale alternatives and self-organized projects that function without or even against the state. Even if state policies can support their spread, these nowtopias tend to be projects ‘from below’. And this is unique to degrowth, compared to other leftist orientations: a strong emphasis on desire-based, visionary, on-the-ground experimentation and organizing. Yet, despite the way this tension sits at the centre of the degrowth project, there have not been many proposals for how to connect these different approaches.4 This tension – between bottom-up small-scale practices and top-down concrete policy proposals – is the starting point for our own proposal for how we can approach the transformation towards a degrowth society. Because, as has been noted before, the degrowth transformation cannot work without properly understanding, and building, those social forces and counter-hegemonic struggles that could accomplish the radical economic reforms discussed in the last chapter – and this requires actively relating bottom-up nowtopias and top-down policies.5

### Perm---Sequencing

#### Degrowth can bootstrap a short term transition that metastasizes into a broader revolution against capitalist consciousness.

Don Fitz 13, PhD at the University of Texas Austin, "Should socialists support degrowth?," Climate & Capitalism, 3-25-2013, https://climateandcapitalism.com/2013/03/25/should-socialists-support-degrowth-2/

There is nothing that strikes to the heart of capitalism more than confronting its primal urge to grow. A failure to identify the culprit as capitalist growth is the major limitation of liberal movements to halt climate change, protect biodiversity, guard communities from toxins and preserve natural resources. Rather than being dismissive toward ongoing struggles against growth, socialists should enthusiastically participate and point to their anti-capitalist essence.

It makes no sense to abstain from ongoing challenges to growth with a claim that anti-growth cannot begin tomorrow. Today’s anti-extraction (i.e., anti-growth) conflicts are the most intense they have ever been. If those who stand back from supporting them claim that they wish to build a new society, the society that they would create would be one whose economy grew and grew until it made human existence impossible.

### Socialist Growth Fails / AT: Phillips

#### Socialist growth alternatives fail.

Talia Hussain 21, MBA from imperial college London “The 'Socialist Growth' Self-Deception” 09/01/21, http://taliahussain.com/journal/socialist\_selfdeception

TO ACCEPT LEIGH PHILLIPS' ARGUMENTS IS TO ABANDON LOGIC AND EVIDENCE. EVEN THE FLAMINGO STANDS ON ONE LEG.

I'm really annoyed to see apparently smart people making favourable comments about this article criticising de-growth on the OpenDemocracy website. TLDR: PHILLIPS' ARTICLE IS WAY TOO LONG, DEFINITELY DON'T READ IT. HE MAKES A GOOD ARGUMENT IN FAVOUR OF STRINGENT MARKET INTERVENTIONS TO REDUCE IRRATIONAL PRODUCTION AND IMPROVE RESOURCE DISTRIBUTION. HE ALSO CLAIMS THAT YOU CAN HAVE GROWTH "WITHOUT LIMITS", WHICH IS NONSENSE, AND THROWS IN THATCHER FOR NO REASON. HE DOESN'T SEEM TO UNDERSTAND THAT THE SIZE OF THE ECONOMY IS NOT A DIRECT PROXY MEASUREMENT FOR HUMAN FLOURISHING.

At first glance, it looks well researched. It includes a lot of numbers, statistics, examples and references to historical thought. It discusses how technological advances have solved difficult problems but also been hindered by perverse economic incentives. But who cares? None of that is relevant to the core argument the author is trying to make. Which is that criticism of the doctrine of perpetual economic growth made by advocates of de-growth is invalid. In his rambling exploration of everything but the kitchen sink, he proves nothing of the kind.

IRRATIONAL PRODUCTION OF LOGICAL FALLACIES. The first section talks about irrational production, which directs resources into activities which don't serve the public good. Phillips gives examples of perverse economic incentives which mean that public goods like antibiotics are underinvested in, while destructive industries like oil & gas attract a lot of investment. Obviously this is a problem, but it's not relevant to growth.

Phillips does make a good argument for market interventions that would advance a range of public goods. He calls this "economic planning". Of course, all economies are "planned" because they all function within rules set by the state (leaving aside black markets and crime). So, he's really advocating for a change in the rules that would produce outcomes different to what's happening now. Fair enough, but nothing to do with growth.

Phillips claims that endless economic expansion within a finite physical system "is not the source of the problem" of ecological challenges, pointing the finger at irrational production. Unfortunately, both things can be a problem.

He goes on to position degrowth in opposition to "socialist growth: a boundless—if carefully planned—increase in the creation of new value". Sigh... First, this creates a false equating of economic expansion with the creation of new value. New value creation also destroys value (ooh, disruption!), so it is possible to create new value without automatically expanding the economy. Steady-state advocates argue it's possible to create new value without "boundless" economic expansion. And you have to because Earth's physical resources are not "boundless".

Unfortunately, the simple fact of the Earth's non-infiniteness seems to have escaped Phillips. He's enlisted in the growth cult, and what follows is a longwinded combination of logical fallacies and motivated reasoning.

PIE WITHOUT APPLES ≠ MARMALADE WITHOUT ORANGES. Phillips carries on his argument in favour of stringent market intervention, with a load of examples including the reduction of CFCs and recovery of the ozone layer. He suggests that because we've substituted other materials and technology for refrigeration, and thereby decoupled ozone depletion from growth, we can do the same for energy. He vastly overextends his argument saying that because decoupling has happened in other areas, it "disproves the claim of the impossibility of absolute decoupling". Like an anti-black swan: because he's seen white swans, the black ones therefore must exist. (Unfortunately, all the evidence so far suggests this is not the case and we'll have to learn to live within our energy budget from the sun.)

He goes on about Malthus, Engels etc. It's a genuinely tedious read, I'm getting bored, I skim... Democratically planned economy? Fine, but it's nothing to do with growth.

He quotes from his own book: the degrowther says "There's an upper limit to what humans can have." the socialist says "through rational planning we can expand human flourishing without limits". Until the last bit, there is no conflict between degrowth and socialist viewpoints. Phillips sets up a false antagonism in favour of something that can never be: expansion "without limits". The degrowther is right, because the physical mass of resources available to us on Earth does have a limit.

Do we need more effective distribution of those resources? Yes. Could we put them to better uses than now? Yes. Can we keep distributing and consuming ad infinitum? No. Because eventually we'll hit the physical limit of what's possible. (Of course, Phillips has only focussed on humans' limitless having, he fails to mention the flourishing of bison, sea cucumbers or dandelions.)

GODWIN'S LAW OF ECONOMICS: AS AN ONLINE ARTICLE ABOUT SOCIALIST ECONOMICS GROWS LONGER, THE PROBABILITY OF A COMPARISON INVOLVING THATCHER APPROACHES 1. Phillips' motivated reasoning kicks into high gear as he throws in Margaret Thatcher, who's utterly irrelevant, to show just how despicable it is to point out that there is only so much fresh water, arable land, copper, fish, etc etc on Earth. We're even running out of sand ffs. Honestly, I couldn't bother reading this in detail. It's about money. Money isn't real. It's a tool to help us manage real resources like water, land, goats, time, lithium, pumpkins and so on. There's a long bit about global mean income. He ignores the role of wealth and capital. He accuses people of "woolly thinking". Rich.

THE END OF CRITICAL THINKING. Finally Phillips proclaims the end of economic growth will be the "end of progress". Progress to what? He hasn't a clue what he thinks we're progressing to, but mindlessly accepts the notion that it's happening, it's good and is equal to economic growth.

He may mean progress toward increased "human flourishing". I imagine a lot of degrowth advocates would see that as a great goal, but it doesn't negate their argument about the finiteness of the Earth. No doubt there are advances that humans have made that have improved our health, wellbeing, knowledge of the universe and understanding of existence. Long may such enquiry continue. But this type of economic activity is not the same literal thing as economic expansion.

Living within planetary boundaries (which will be enforced by default eventually) doesn't mean an "end to technological advancement" or "end to freedom" as Phillips grandly claims, with examples that are simplistic at best. He talks about the artistic and consumer "freedom" gained when copyright laws are struck down. He ignores that, as a writer, those laws ensure his ability to buy groceries while vast energy sucking server farms full of plastic and rare earths are required to store his 'free' online articles. He describes a theoretically more efficient widget creating "additional room" for economic growth as a proof of the "feasibility of decoupling". Caught up in his own circular logic he fails to see that a) no such widget exists in the energy sector, or that b) in his decoupled scenario the size of the economy doesn't increase. Such increases in productivity do not require and expansion of economic activity (although this has always resulted historically).

# Case Answers

## Social Good ADV Answers

### Resilience D---1NC

#### Many thumpers to supply chain prices and disruption---BUT COVID solves---deglobalization and resilience (to both price volatility and thumpers)

Tsang et al. 21, Raymond Tsang, and Gerry Mattios, both partners and leaders of Bain & Company's Performance Improvement practice based in Shanghai and Singapore respectively; and Sri Rajan, partner based in San Francisco; “Confronting a new era of supply chain volatility,” Bangkok Post, 4-8-2021, https://www.bangkokpost.com/opinion/opinion/2096827/confronting-a-new-era-of-supply-chain-volatility

As Covid-19 threw fragile global supply chains into disarray, many companies were stunned by their own vulnerability. The risk of depending on a supply base that is concentrated in one geographic region has been increasing over the past 30 years, but the pandemic quickly demonstrated how much chaos and pain one unexpected event could inflict.

It was a powerful wake-up call. The disruption triggered by Covid-19 has prompted leadership teams to confront a new era of supply chain volatility.

Bracing for an era of increased turbulence, leading multinationals are rethinking their supply chain strategies to lower the risk of disruption. In a recent survey of 200 global manufacturers by Bain & Company and the Digital Supply Chain Institute, executives ranked flexibility and resilience as their top supply chain goals. Only 36% of senior executives ranked cost reduction as a top three goal, down from 63% who saw it as a priority over the past three years.

To improve supply chain resilience, 45% of respondents plan to shift production closer to home markets in the coming years. The good news is that automation has reduced the cost of manufacturing, eroding the labour arbitrage advantage that fuelled decades of investment in offshore production.

The cost of humanoid robots is comparatively lower now which means companies with processes capable of being automated such as consumer electronics can opt to move supply chains closer to home without raising costs significantly.

For the last 30 years, manufacturing companies have wrung out supply chain costs by disaggregating the various steps of the value chain, concentrating each step with a limited number of companies and geographies to improve economies of scale.

As a result, most leadership teams lack sufficient supply chain visibility to assess their geopolitical and geographical risks.

Before investing in a new supply chain strategy, successful leadership teams evaluate their supplier and contract manufacturer risk according to two factors: the country where goods are produced and the supplier's headquarters location.

Two key factors that determine geopolitical supply chain risk are the supplier's headquarters and its manufacturing location.

Once leaders understand their risk exposure, they start building resilience into their value chains in a two-step process. First, they quickly add flexibility to the supply of finished goods and high-risk subcomponents where possible, to limit immediate risks and satisfy customers. Second, they take a strategic approach to rethinking the value chain from end to end. That includes deciding the pace of change and periodically reviewing decisions based on external conditions and internal capabilities. Below are three steps to help companies pioneer the shift to supply chain resilience:

1. Boost flexibility

Supply chain flexibility is becoming a more and more important concept for gaining competitive advantages. The first priority in making supply chains shock-proof is increasing flexibility for supplying finished goods and high-risk subcomponents. This would open the possibility for companies to respond to short-term changes in demand and supply situations as well as structural shifts in the environment of the supply chain on an immediate basis.

Not many countries have the capacity and infrastructure to handle all the volume, so manufacturers often have to piece together a solution across multiple neighbouring countries. For many companies, aligning a new production location with demand can deliver significant benefits, particularly in industries where demand is rising even through the downturn, including MedTech and certain consumer products.

2. End-to-end network rethink

For each value chain, leadership teams need to properly balance risk and resilience at the lowest total landed cost. This includes decisions on single vs. multiple sourcing, where to manufacture at each stage of assembly, and proximity to customers. They also need to determine whether to produce in-house or outsource, taking into account variables such as national incentives and declining manufacturing costs. Successful companies revisit their value chain choices regularly, especially in turbulent times.

3. Balancing cost and risk

Resilience does not eclipse every consideration. As leadership teams start to understand where they need flexibility, they face important trade-offs on cost. Investing in too much flexibility can render a company uncompetitive. As they look to reshape supply chains for the future, successful companies determine how much resilience they need, where it matters most, and what they can afford.

Resilient and flexible supply chains can be a powerful defensive hedge, but also a source of competitive advantage. Leaders make the most of options such as capacity buffers, digital infrastructure and nimble teams to react faster and more efficiently than their peers.

The investment to build and maintain these capabilities varies, depending on a company's need for responsiveness and efficiency, as well as the level of industry competition. This is why the roadmap for resilient supply chains must be linked to a company's long-term business strategy. For example, a high-growth business that has high margins and short product life cycles, and is dependent on components coming from widely distributed sources such as high-end cell phones, will require a different type of supply chain resilience than a hypercompetitive low-margin business, such as clothing or toys, which relies on imported finished goods.

Geopolitical volatility and market turbulence will transform supply chain management in the coming decade. Leadership teams that invest in strategies to increase supply resilience will simultaneously create a new source of competitive advantage.

#### Localization reduces resilience.

Alessio Terzi 22, also an Economist at DG ECFIN of the European Commission, and a lecturer at HEC Paris and Sciences Po (Lille), was an Affiliate Fellow at Bruegel, the leading European economics think-tank, and a Fulbright Scholar at the Harvard Kennedy School, obtained a PhD from the Hertie School with a thesis on economic growth, holds an MPA in economic policy from the London School of Economics, and a BSc in international economics from Bocconi University, “The Limits of Economic Growth,” Growth for Good: Reshaping Capitalism to Save Humanity from Climate Catastrophe, Harvard University Press, 2022, pp. 25–40

Ecovillages are not a proof of concept

From Jackson to Hickel, when degrowth zealots are questioned about the feasibility of their blueprint for societal reform, they at some point bring up ecovillages as a proof of concept. These are small communities, mainly in Europe but scattered across all continents, typically composed of 50 to 250 individuals who reject capitalist principles, embrace the desire to go back to the land, and strive to minimize their environmental impact. They do this by engaging in self-sufficiency, regenerative agriculture, and communal practices. These communities have their historical foundations in the “back to the land” movement that gained momentum in the 1960s and 1970s, but their ideological roots go back at least to late-1700s utopian anarchist thinker Charles Fourier and the Phalanstère—his model for self-contained intentional communities.

Within the degrowth literature some voices can be found calling ecovillages a sign of the movement’s failure to persuade citizens broadly to embrace an ecosocialist vision; these communities are no more than retrenchments from the capitalist system to organize in an alternative way. 33 In any case, the fact that ecovillages exist and thrive across the world represents no proof of concept, if the concept is a scaled-up version of their organization to society at large.

First, by definition, these villages bring together ideologically homogeneous people with a shared vision of the world and common environmental values. This reduces the scope of potential societal tensions, while hardly showing the system to be able to cope with diverging views within it. Meanwhile, the very fact that a liberal democracy and capitalist society hosts ecovillages shows that the current system is able to incorporate dissenting views and diverse lifestyles within it—something ecosocialism would not.

Second, note that while there are ecovillages there are no eco-cities. In a small setting, complexity is minimized and governance can take the form of direct democracy, or even consensus decision-making. The same could never be true for a heterogeneous city—say New York City, with its eight million people—where energy supplies, food logistics, garbage collection, plumbing, policing, hospital care, firefighting, pest control, and many more services must be organized on a daily basis just to keep citizens alive. Making allocation decisions in such a setting in centralized, recursive ways, and by direct democracy no less, could hardly work. Either those decisions would be constantly behind the curve, or there would have to be a loose set of general principles, granting strong discretionary powers in their granular application to agents of the state. Here again we should recall the experience of the Soviet Union, whose centralized, five-year plans could not deal with the granularity of innovation, production, and consumption choices in a society that was complex and only growing more so. 34 Its initial vision of a just society organized bottom-up by the votes of proletarians through workers’ councils (or soviets) led to large-scale inefficiency and then, to counter that, a rapid spiral into ever more centralized decisionmaking—all undermining the original desire for participation and justice.

Third, and most important, ecovillages might be superficially fenced off from capitalist dynamics, but ultimately they depend on them. Rather than descend to primitive conditions, ecovillagers make use of technologies developed and produced elsewhere. They benefit not only from the production of electricity, or of solar panels for that matter, but also from heating technology, repair and maintenance supplies, roads, and the telecommunications systems, smart devices, and internet they need to connect to other members of the Global Ecovillage Network. If this invites the counterargument that many essentials can be obtained secondhand or even for free, that only shows the reliance on capitalism to be stronger: it means the village model depends on capitalism’s capacity for overproduction.

En passant, this last argument also relates to the current social tendency to celebrate individuals who embrace minimalistic lifestyles or “downshift” in significant ways. The story typically goes as follows: a young ambitious person climbs through the ranks of the corporate world, only to realize this lifestyle does not bring fulfillment, and quits. Then often follows a combination of abandoning the big city life, moving to a simple dwelling, perhaps in the countryside, living with only few items, and enjoying regained freedom in contact with nature. There is no contesting that such a change can bring joy to the individual, assuming the financials can be squared. For reasons detailed above, however, we must admit that the entire viability of this model depends precisely on the rest of society’s not emulating it. The lifestyle is possible because it leans on a capitalist system continuing to provide the healthcare, security, education, energy, pest control, physical and digital infrastructure, heating, cooling, housing, and whatever other goods and services the minimalist keeps using.35 An individual’s downshifting experience is therefore no more useful a blueprint for an alternative frugal society than a wilderness camping trip is for the organization of a nomadic community.

A related point can be made about resilience, or the capacity of ecovillages to respond to unexpected shocks. Ecovillages are a fair-weather social construct, and function insofar as the sea is not rough. They count on the fact that the wider (capitalist) society is there to serve as safety net should things go south. What if a new pathogen spreads and agricultural crops are lost? What if an epidemic erupts? How about if antibiotic resistance becomes widespread? Or a natural disaster hits?36 Or extreme weather events become prevalent?37 Would ecosocialism be able to respond to these shocks effectively—or at least, would it be able to adapt and react as well as today’s advanced economies do? In the context of Covid-19, would a centralized degrowth economy have been able to mobilize resources quickly and scale up the infrastructure to deal with a surge in hospitalizations, or the knowledge facility to rapidly develop and distribute a vaccine? These are all open questions, and the answers cannot be found in the experience of ecovillages, which have relied on the wider capitalist system to fend off such threats.

### Resilience D---2NC

#### Adaptation solves societal collapse---the historical record goes neg.

Rebecca Onion 17, Staff Writer for Slate, “What Really Happens After Societal Collapse,” Slate, 06-21-2017, <https://slate.com/culture/2017/06/what-really-happens-after-societal-collapse.html>

The new apocalyptic horror film It Comes at Night dwells, like so many bits and pieces of pop culture lately, on what happens when a society disintegrates. “Preppers are crazy people and they’re kooky,” writer-director Trey Edward Shults told Slate’s Jeffrey Bloomer earlier this month, “but then once you start hearing that economic collapse is not insane, then you start thinking about what people do when things fall apart, and how primal that gets, and what you need to do to protect that, and that started to fascinate me.”

Most of the apocalyptic movies, books, and TV shows I’ve consumed have, like Night, taken an extremely dim view of human nature. Prepper fictions assume that weak “takers” will try to mooch off of better-prepared “makers” in the wake of the flu or an electromagnetic pulse, and that the makers will need to terminate the takers with extreme prejudice. Even more literary apocalypses feature chained-up human livestock in basements and infants on spits. I had to finally stop following The Walking Dead, once one of my favorite shows, because I couldn’t stand to watch the baseball bat scene. “There’s no trust in [the show’s] world, no kindness, unless it’s exhibited by some soft-hearted fool who’s about to end up as walker chow,” my colleague Sam Adams wrote after that episode aired.

But a commenter on Slate’s review of It Comes At Night declared himself untroubled, even mildly irked, by the darkness of this film and its kin. “I get a little bit annoyed by the constant ‘hell is other people’ themes of US post-apocalyptic movies, because it’s pretty well known what happens when society collapses, and it’s not dog-eat-dog every-man-for-himself, it’s society-rebuilding. Pretty much instantly,” the commenter wrote. “We know this because society has collapsed thousands of times, on smaller and bigger scales. What always happens is that the survivors regroup, organize, and rebuild.”

Can this ray of sunshine be trusted? I’d love to believe it can be. I asked Scott Knowles, a historian of disaster, what historians and sociologists who study collapses and disasters have to say. His answer: It depends. “We help, and also we don’t,” Knowles said in an email to me. Over the years, academic researchers have gone back and forth on the question. “This whole area of work really got going in the Cold War when defense planners wanted to model post-[nuclear] attack scenarios,” Knowles wrote. The Disaster Research Center at Ohio State University (which has since moved to the University of Delaware) “did the work over years to model community response, and they pushed back strongly on the idea of social collapse—they found instead too much of the opposite—people converge on a disaster scene!”

In a 1961 paper (unpublished until 1996), sociologist Charles Fritz laid out the case for this “contrary perspective” that disasters and other majorly stressful events don’t necessarily result in social breakdown and trauma. Fritz, who had begun his observations of disasters while stationed in Britain during the Blitz, reported that during that time he saw “a nation of gloriously happy people, enjoying life to the fullest, exhibiting a sense of gaiety and love of life that was truly remarkable,” with Britons reaching beyond class distinctions, sharing supplies, and talking to people they had never spoken with before. Marshaling sociological and historical evidence, Fritz recounts example after example of people pulling together in the middle of tragedy: black and white police and militia members uniting to maintain order during the yellow fever epidemic in Memphis in 1878; enemies forgetting old quarrels during the German bombing of Krakow in World War II; community members reporting strengthened personal relationships with neighbors after the White County, Arkansas, tornado of 1952.

Since Fritz’s work in the middle of the 20th century, other researchers have tried to fill in the blanks, looking at disasters big and small in various countries across the world. “In general,” Knowles wrote, “there is an agreement that people are pro-social” (in other words, they will try to form alliances with each other and help out, just as the commenter argues). “But of course, that has limits based on the perception of government care and assistance, the actions of law enforcement, wealth of the community, stability of communities and families, and age.” Rebecca Solnit, in her 2009 book A Paradise Built in Hell: The Extraordinary Communities That Arise in Disaster, described the deeply contradictory, and not entirely negative, effect that disasters have on communities: “In each disaster, there is suffering, there are psychic scars that will be felt most when the emergency is over, there are deaths and losses. Satisfactions, newborn social bonds, and liberations are often also profound.”

Scholar Ilan Kelman runs a site called Disaster Diplomacy that collects case studies, trying to determine why some disasters lead to greater cooperation between groups and others don’t. In one post, Kelman explains how the United States and Cuba negotiated (mostly failed) offers of mutual aid after hurricanes throughout the 2000s. “Disaster-related activities can catalyze diplomacy, but are unlikely to create diplomacy” where none existed before, Kelman wrote. If two parties—countries, or groups inside countries—have been talking about extending mutual aid and friendship already, help is likely forthcoming. If they haven’t—according to the case studies Kelman and others have gathered—it might not be. During a big and ongoing collapse, like the one climate change (or an international pandemic) is likely to be, people’s actions will be increasingly difficult to predict, because so many countries will be involved.

People are not the same everywhere and across time. I know this argument doesn’t make excellent fodder for horror films. But there are fictions that approach the imagination of disaster carefully, without assuming that “humanity” is a constant across situations, and that scarcity will always end in war. In Kim Stanley Robinson’s new climate change book New York: 2140, most of the city is submerged by rising sea levels, but new organizational structures also spring up to allocate the resources that remain. This is not an idealized future—people go hungry, and predatory capitalists profit—but it’s not dystopian either. Characters form alliances and friendships, fight for one another, and share what they have.

As Robinson said in a 2015 interview about dark visions of climate disasters: “There’s another scenario where we get hold of our technologies, our social systems and our sense of law and justice and we make a kind of utopia—a positive future where we’re sustainable over the long haul. We could live on Earth in a permaculture that’s beautiful. From this moment in history, both scenarios are completely conceivable.”

I hope he’s right.

### Resilience D---Turn

#### Abandoning growth reduces societal resilience from innovation. That causes massive resource wars.

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Clearly, what I have been advocating more or less explicitly throughout this book, and especially in this chapter, is that we stop hoping that a global problem will be solved by a neat, first-best, global-treaty type of solution. Rather, it is better to look for second-best solutions that operate through the nation state and safeguard liberal democracy. This view has been predicated on multiple grounds, generally resting more on practical, rather than moral, considerations. First, liberal democracy has proved a crucial tool to foster creativity and innovation, which under any scenario will be direly needed to stave off climate catastrophe.64 Second, bringing the concept of in-group at global level, and generating a tight cohesion among all humanity, is unlikely to work, neither over the thirty-year planning horizon that climate mitigation dictates, nor at any point in the foreseeable future. Third, decarbonization and climate mitigation will effectively touch on every aspect of policymaking and people’s lifestyles for decades. The Reverend Martin Luther King Jr. once remarked that “budgets are moral documents”—and in the years and decades to come, budgets will be dictated in no minor part by climate mitigation and adaptation. Each nation will need to devise the most appropriate country-specific decarbonization strategy, compatibly with prevalent national value systems, implying that no “green straitjacket” can credibly be imposed top-down.

With the climate trilemma in mind, one should not be surprised that mega agreements such as Kyoto and Paris did not contain explicit binding mechanisms—a cause for vigorous complaints by climate advocates.65 The Paris Agreement is built around so-called nationally determined contributions. This is a bottom-up process allowing countries to come up with their own carbon reduction plans, with no guarantee that the plans will collectively keep global temperature rise well below two degrees Celsius. Most countries, indeed, are not even on track to meet the self-determined pledges they made under the original Paris agreement (let alone the more ambitious ones presented in Glasgow), and there is little that can be done top-down to coerce them.

Because climate agreements cannot be credibly binding, and will rather remain voluntary, any sort of discussion on the “fair share” of greenhouse gas emissions reductions for each country will inevitably run into a dead end. This could seem a rather depressing and hopeless conclusion. And yet, all it is meant to imply is that any successful scenario of climate mitigation must be made compatible with the iron law of national self-interest. It is for this reason that technology-induced cost reductions, of the type we saw in Chapter 6 for electricity generation, are so important. This dynamic suddenly turns the green transition into a matter of direct and immediate commercial self-interest for a country, shaking off any need to rely on voluntary self-sacrifice for future generations or humanity as a whole.

From national to planetary green transition

Often quoted is this quip by British prime minister Winston Churchill: “Democracy is the worst form of government, except for all the others.” Similarly, a green transition carried out in the pursuit of national interest is not optimal, but probably the most feasible and least worst option, taking all dimensions into account: climate, social, and geopolitical. And while this is not a global solution, there are reasons to believe that it can be engineered to ensure propagation across the world.

The master plan would pan out as follows. Industrialized countries with high greenhouse gas emissions would power through with the green transition, and this is more and more likely to happen now that, as we saw in Chapter 6, this is becoming a profitable investment opportunity. This includes not only the West, or OECD countries, but also China, which from the standpoint of resources and technological capacity is well positioned to be a green early adopter. These countries have a strong, self-interested incentive to fast-track the adoption of these new technologies to gain an edge in what will be the energy and production system of the future. By so doing they will be capturing network effects, setting regulatory and technological standards, and effectively shaping the very course of the green industrial revolution.66

In the process, early adopters will show the way to the rest of the world, through two channels. First, their actions will prove that the transition is feasible, and even beneficial, given local benefits such as a better air quality and positive effects on citizens’ health and well-being. Second, they will demonstrate how such a complex transformation can be achieved in practice.

When this happens, we will fall back onto a well-known dynamic: the international demonstration effect. First postulated by Estonian economist Ragnar Nurkse in 1957, and later empirically verified by a variety of studies, this is the process by which people in poorer countries tend to adopt the products, technologies, and trends of richer nations. We see this process of emulation within countries, as discussed in the context of the innovation treadmill in Chapter 5. Nurkse, formulating his theory in the aftermath of the introduction of a powerful early information and communication technology—the television—argued that this also applies at the global level. The propagation effect he described is probably even stronger today thanks to the internet and, more specifically, social media.

As green technologies become a permanent fixture in advanced economies, these production methods and consumption patterns are likely to expand throughout the world, just like blue jeans, Coca-Cola, and Facebook have in the past. Initially, through the highly interconnected cosmopolitan rich elites emulating green icons of success and modernity. Later, through the standard innovation treadmill within countries. This, incidentally, is what Lant Pritchett was noting in his example of how advanced-country technologies get propagated to the developing world, to an extent irrespectively of local relative prices (see Chapter 6). Of course, this will leave ample space for local experimentation and adaptation.

Within this context, having abandoned the logic of self-sacrifice, we can then easily imagine rich countries helping out less developed ones in the energy transition, including through financial transfers, for two reasons. First, by pursuing a model based on a rapid green transition that fosters economic growth and jobs, and technological innovation for climate adaptation, advanced economies will have yet more leeway to devote extra resources to foreign aid, including for a global green transition. Again, abundance rather than scarcity fosters international cooperation. Second, aid will also be powered by a logic of national self-interest, given that the companies of early adopting countries will detain an edge in green technology and infrastructure, and governments will want to push their market and standards also abroad. In other terms, development policy, international climate mitigation objectives, geopolitical interests and national industrial policy will all be closely aligned.

Other motives that could favor large financial transfers to ease the transition abroad could include the protection of some specific global common goods, as for example the Amazon Forest. One could see from this perspective the significant international financing connected to the so-called Great Green Wall, to contain desertification in Africa. Clearly, these targeted financial transfers could also be channeled through international and regional development banks.

To a more limited extent, we are likely to observe important financial transfers connected to the hosting of some green energy generation facilities, such as solar panels or windmills. Based on natural factors, the best locations for these facilities are often found in developing countries, which could then export energy to high-consumption countries.67 This could be seen as a sort of energy outsourcing, creating local jobs and transferring technological know-how, just like manufacturing outsourcing has over the past decades.

Finally, there are solid reasons to expect that over the coming decades, as the effects of climate change will be more and more visible, a green agenda will rise to the top of the priority list. This will constitute another push factor for a global green transition, even in the absence of binding treaties. This is particularly the case in emerging economies, which currently are the most reticent to prioritize decarbonization, but which will feel the strongest early pinch from climate and environmental stress.

At this point, the reader could be left wondering: Is there a role for global international agreements, like Paris, and its Glasgow update, or are they useless in light of the above? To be clear, they are not useless at all. Climate treaties play a crucial role by creating forums where countries come together, use standard frameworks to assess their progress, share items of concern, exert some useful peer pressure, and even arrive at some very targeted solutions.68 As with the example of the ozone hole, it is perfectly possible that successful agreements will be signed to adopt some joint policies and fix specific problems. For instance, it is increasingly clear that averting depletion of fish stocks and catastrophic biodiversity collapse calls for, aside from avoiding extreme climate change, establishing no-fishing zones at sea and large natural reserves on land.69 Alliances might similarly be required to stop the damage thawing permafrost and retreating ice shelves in the Arctic and Antarctica.

Multilateral, all-encompassing international treaties should be seen for what they are: culminations of aligned national greening political agendas, rather than stepping stones toward top-down, technocratic decarbonization, or silver bullets to defeat climate change. They should not exclude other binding international agreements that are smaller both in scope (focused on selected environmental policies) and in size (involving fewer parties). Recent proposals for a joint EU–US, or possibly G7, initiative for a common tax on carbon, would fall into the latter category. 70 Especially among countries that are relatively close in terms of their value systems, levels of development, industrial structures, and political priorities, agreements like this are within reach.

In this chapter we have gained more reason to doubt that, faced with the threat of catastrophic climate change, the right move is to curtail economic growth. That recommendation is predicated on the delusional principle that, under the pressure of bounded resources, people will come together and share peacefully what is available. In the history of past human experience with climate and environmental stress, and in the principles of evolutionary anthropology and cognitive science, there is no evidence that world peace and humanity-wide sharing would be the most likely outcome.

Abandoning economic growth would weaken the scope for innovation, exacerbate perceived scarcity, and reduce resilience—and do so just as climate change was beginning to unleash its powerful effects. It would, in the face of scarcity and heightened uncertainty, set off a scramble for limited resources as people retreated for protection to their nation state ingroups. We can chastise all this as offensive to morality, but ignoring these human traits and historical lessons will most likely take us where we do not want to go. On the other hand, in my view, our moral compass should guide us all to try and avoid at all costs a return to a zero-sum world and a hyperconflictual foreign relations scenario. History shows how, when the climate and environment start changing, what we should be most afraid of is intergroup conflict. And the only difference today, with respect to the past, is that human weapons are much more deadly.

As societies find themselves between a rock and a hard place—facing catastrophic climate change on one side, and catastrophic conflict over bounded resources on the other—the escape route is narrow but, given the alternative, must be pursued.71 In abstract terms, it involves using technological innovation and human ingenuity to shift away from the logic that salvation can only come with national sacrifice for the global good, or fair-share valuations, to the logic that casts decarbonization efforts as investment opportunities.

### Resilience D---AT: Civil War

#### No civil war.

Richard Hanania 20, research fellow at Defense Priorities, and a postdoctoral research fellow at the Saltzman Institute of War and Peace Studies at Columbia University, “Americans hate each other. But we aren’t headed for civil war,” The Washington Post, https://www.washingtonpost.com/outlook/civil-war-united-states-unlikely-violence/2020/10/29/3a143936-0f0f-11eb-8074-0e943a91bf08\_story.html

The men arrested in early October and charged with plotting to kidnap Michigan Gov. Gretchen Whitmer (D) apparently hoped that doing so might help set off a civil war — pitting lovers of liberty like themselves against treasonous statists. The goal may sound outlandish, but fringe militia members aren’t the only ones who think a second civil war could occur in the United States. Recently, New York Times columnist Thomas Friedman said that the situation in this country reminded him of his time in Lebanon, where in the mid-1970s street clashes between sectarian militias erupted into multifaceted strife that lasted a decade and a half. David Kilcullen, an Australian scholar and adviser to the U.S. Army, described America in June as being at the point of “incipient insurgency,” while the academic Peter Turchin recently wrote — pointing to riots and rising economic inequality — that “we are getting awfully close to the point where a civil war or revolution becomes probable.”

The logic underlying most of these predictions is consistent and straightforward. Americans are more divided on social and political issues than in previous decades, and they hate each other more. Violence is boiling over: Armed right-wing militants traveled to sites of left-wing protests this summer, supposedly to enforce order, and deadly clashes occurred. If tensions continue to grow, these isolated incidents could become more common — and the United States might follow the path of other nations that have experienced full-blown armed conflict in recent decades.

Despite its appeal, this view betrays a fundamental misunderstanding of political violence. Historically, the academic literature on the causes of civil war was divided into two categories: Some scholars viewed such conflicts as a predictable outcome whenever there were deep grievances within national populations, while others stressed the importance of citizens having an opportunity to act on those resentments. Much of the discussion about violence in the United States today centers, implicitly, on the grievance model, holding that if we know how much different tribes of Americans hate each other, we can predict the likelihood of fighting in the streets.

But scholars now prefer the opportunity model, thanks to large-scale studies that examine political violence worldwide with cutting-edge statistical methods. Grievances and societal cleavages exist everywhere, waiting to be exploited. What distinguishes the countries that descend into civil war from those that do not is the lack of state capacity to put down rebellion — for reasons rooted in politics, economics or geography.

You might expect, for instance, states that lack democracy, that have diverse populations or that discriminate against minorities would be at the highest risk of internal conflict, because such conditions foment bitter grievances. But in fact, those qualities are at most loosely correlated with civil war, as scholars like the Stanford University political scientists James Fearon and David Laitin and the University of California at San Diego’s Barbara F. Walter have shown.

Rather, civil wars happen where the state is weak. Lower levels of wealth predict civil war, because poor countries lack the law enforcement and military capability to put down armed rebellions. That helps to explain recent conflicts in such varied countries as Yemen and Congo. Power vacuums, as occurred during and after decolonization, after American regime-change wars and after the collapse of the Soviet Union, create uncertainty about who is in charge and can inspire those who seek power to take up arms. There are other factors, too: States that are rich in oil see more civil war because the potential payoffs of a successful rebellion are higher — but this applies only up to a certain level of income, after which point the government is often able to buy off or destroy any potential challengers.

The Balkans offer a ready example of how grievance based on ethnic tension must be intertwined with the collapse of order for groups to take up arms against one another. While various ethnolinguistic communities there long eyed each other with suspicion, going back to the days of the Ottoman and Austro-Hungarian empires, those tensions did not lead to violence for most of the region’s history, including during the nearly half-century of communist rule. But when the Soviet empire fell and communist governments were discredited, parts of Yugoslavia began to declare independence. Serbs, Bosnians, Croats and Albanians, incited by political opportunists and demagogues, fought wars against one another for a decade, drawing in the international community, until sovereign states emerged with new, widely accepted borders.

In one influential 2006 study representative of the new school of thought — one that examined 172 countries from 1945 to 2000 — the political scientists Havard Hegre, of the Center for the Study of Civil War, and Nicholas Sambanis, of Yale University, used advanced statistical tools to determine which of 88 factors most consistently predicted civil war. Grievance-based measures like authoritarian government and ethnolinguistic diversity ranked low or had no discernible effect (although the latter did predict internal conflict when the analysis included the lowest level of conflict measured, defined as 25 or more deaths in a year). In contrast, Hegre and Sambanis found that measures of opportunity like a small military establishment and rough terrain — which offers a base from which rebels can strike — had a much stronger and more consistent effect.

Geography is a surprisingly potent variable in predicting civil war — and can confound even moderately strong states. During such conflicts, governments usually control the cities, and rebels form bases in relatively inaccessible regions like mountains, forests and swamps. Countries that have had problems with mountain-based minorities include Russia, which has confronted rebels in Chechnya, and Turkey, which is still fighting Kurds in the southeast of the country. (Until the 1990s, the Turkish government even referred to Kurds as “Mountain Turks,” denying their identity while acknowledging the geographical nature of the problem.)

Even with the most difficult geographic conditions, however, wealth and government power tend to erase opportunities for rebellion. Consider that in 1948 and 1949, South Korea faced a communist-led uprising on Jeju Island — which lies in the Korea Strait, about 60 miles from the mainland — in a conflict that cost as many as 30,000 lives, mostly civilian. A poor, newly independent South Korea had difficulty bringing that island under control and relied on brutal tactics to do so, including summary executions. But now that South Korea has joined the club of modern, industrialized states with advanced militaries, the idea of a region like Jeju rebelling has become unthinkable.

Wealth and military power explain why, in the United States, civil war is likely to remain a metaphor. Its per capita gross domestic product is about $62,000 a year, among the highest in the world, and its military is clearly capable of wiping out any challenges to state power. (The U.S. Civil War occurred when the nation had a per capita GDP comparable to that of a developing nation today, and when military technology was limited to rifles and cannon.) The Pentagon has 1.3 million active-duty personnel, can find terrorists on the other side of the world and wipe them out with the push of a button, and boasts a command-and-control structure with no recent history of factionalization. There is no swamp or mountain peak that is beyond the easy reach of the U.S. military.

A recent survey by Nationscape revealed that 36 percent of Republicans and 33 percent of Democrats thought that violence was at least somewhat justified to accomplish political goals. The opportunity model suggests that while a survey result like this reveals disturbing things about our political culture, it does not presage civil war.

To be sure, riots and general discord can happen as long as leaders lack the political will to respond (or if, as today, leaders disagree about the line dividing peaceful protest from lawlessness). But as soon as the authorities perceive a serious enough problem, they can move quickly and decisively, a lesson learned by the anarchists who recently took over part of Seattle, declaring it the Capitol Hill Autonomous Zone. They were tolerated for just over three weeks until they were cleared out by local police in partnership with the FBI. Law enforcement at the local and national levels, from police to the military, remains united and under civilian control, willing and able to put down potential threats to our governing system or territorial integrity.

### Resilience D---Squo Solves

#### Supply chain relocation is inevitable – COVID and U.S.-China strategic rivalry ensure it.

Hiroyuki **Suzuki 21**, Visiting fellow with the Japan Chair at the Center for Strategic and International Studies, February 2021, “Building Resilient Global Supply Chains: The Geopolitics of the Indo-Pacific Region,” CSIS, https://www.csis.org/analysis/building-resilient-global-supply-chains-geopolitics-indo-pacific-region

Covid-19 Has Accelerated Supply Chain Restructuring

During the era of globalization over the last two decades, companies of all sizes have been building domestic and international supply chains that prioritize efficiency. However, rising labor costs in emerging economies, including China, and growing geopolitical uncertainty due to U.S.-China strategic rivalry, including the strengthening of protectionist policies in the United States, forced a reassessment of global business models—such as multinational corporations announcing plans to relocate their manufacturing operations to Vietnam and Mexico in 2018–19. The Covid-19 pandemic has greatly accelerated this trend and reaffirmed the importance of protecting citizens’ livelihoods by strengthening supply chains. In particular, the impact on essential commodities such as food and medicines and on social infrastructure, coupled with political tensions, provided an opportunity to promote policies of homeland security in many countries.

In response to an increasingly complex global economic environment, global corporations are taking the following measures to reduce supply chain risk:

▪ Reshoring

In short, this is a strategy to redirect manufacturing operations back to the home market. This trend has been evident since 2019, particularly in the United States due to tariff increases in the wake of the U.S.-China trade conflict that have caused the U.S. manufacturing import ratio (imports as a percentage of total domestic manufacturing output) to fall for the first time in almost a decade. In addition, the Covid-19 pandemic has increased awareness in the United States of the vulnerability of supply chains for critical items such as health care products and food, further encouraging policies that allow companies to repatriate their supply chains back to their home countries. However, in the case of developed countries, reshoring entire supply chains is not practical due to additional labor and overhead costs, so it is important to focus on strategic sectors for reshoring from a national security and industrial policy viewpoint.

#### BUT large scale restructuring is impossible.

Sara Brown 20, News Writer for MIT Sloan, “Reshoring, restructuring, and the future of supply chains,” MIT Sloan, 7/22/20, https://mitsloan.mit.edu/ideas-made-to-matter/reshoring-restructuring-and-future-supply-chains

Companies are unlikely to completely abandon China

The new coronavirus has put a spotlight on the world’s reliance on Chinese manufacturing, and prompted speculation that supply chain restructuring might start with pulling out of China.

But “this is really not happening,” said Sheffi, the director of the MIT Center for Transportation and Logistics, at the EmTech Next conference last month. While some companies have been leaving China over the last decade as costs go up, Sheffi said most can’t, and won’t, move their supply chains out of the country completely.

China is a sophisticated supplier of many parts, he said, pointing out that clothing manufacturers who have left China for other countries are still buying Chinese textiles. Proof in point: While China’s share of clothing manufacturing has fallen over the last five years, its export of raw textiles, which are made with sophisticated large machinery, has gone up.

Even if sewing and parts of some other industries leave, “big industries invested decades in building up a whole ecosystem in China,” Sheffi said. “It will take decades and untold money to move out of China, so I don’t see it happening very quickly.”

Sheffi said none of the executives he’s interviewed for an upcoming book expressed plans to move out of the country entirely.

“They just can’t,” he said. Even if costs are high, China offers capability, speed, and sophistication — an entire ecosystem that can’t easily be replicated or replaced.

#### AND alt cause---COVID disrupts supply chains.

Yen Nee Lee 20 is a correspondent for CNBC.com based in Singapore, covering a range of business topics from around the region, including trade, finance. Coronavirus pandemic will cause a 'much bigger wave' of protectionism, says trade expert. 4/9/20, <https://www.cnbc.com/2020/04/10/coronavirus-expect-a-lot-more-protectionism-says-trade-expert.html>

Governments around the world will turn increasingly protectionist in the near term as they try to limit the economic damage from the coronavirus pandemic, a trade expert said on Thursday.

COVID-19 has already spread to more than 180 countries and territories and caused some countries to restrict exports of medical supplies — that's a decision that could spill into other areas such as food products, said Deborah Elms, executive director at consultancy Asian Trade Centre.

"There is a much bigger wave of protectionism in the near term that we should expect, that is not just in medical supplies ... but it will also start to affect food," she told CNBC's "Capital Connection."

"As countries get nervous about food stocks and food supply, food security, they're going to stop allowing the export or restrict the import of food products," she added. Global economic activity, including trade, is at risk of grinding to a halt as countries implement social distancing and quarantine measures of varying degrees to fend off the spread of the coronavirus disease, formally referred to as COVID-19.

The World Trade Organization on Wednesday said global trade — which was already slowing in 2019 due to the U.S.-China tariff fight — is projected to plummet by 13% to 32% this year. A recovery is expected in 2021, but that depends on the duration of the outbreak and the effectiveness of policies to combat the virus impact, according to the WTO.

### Inequality Low---1NC

#### Inequality is statistically insignificant – there’s zero need for antitrust.

Wright et. al 19, Joshua D. Wright, University Professor and Executive Director, Global Antitrust Institute at Scalia Law School; Elyse Dorsey, Attorney Advisor to Commissioner Noah Joshua Phillips, United States Federal Trade Commission; Jonathan Klick, Professor of Law, University of Pennsylvania; Jan M. Rybnicek, Counsel in the antitrust, competition, and trade practice of Freshfields, Bruckahus Deringer LLP, “Requiem for a Paradox: The Dubious Rise and Inevitable Fall of Hipster Antitrust,” Arizona State Law Review, 2019, vol. 51

2. The Empirical Evidence: Is Inequality Really Growing?

All of the papers discussed above assume that inequality has increased in recent years. This view is fairly common among economists and would seem to be borne out as seen in Figure 2 below, which presents the Gini coefficient for U.S. incomes for the last fifty years.166

Chart, line chart

Description automatically generated

Figure 3, which plots the ratio of the share of US income among the fifth quintile of income-earning households to the share among the first quintile of households167 tells a similar story.

Chart, line chart

Description automatically generated

Robert Kaestner and Darren Lubotsky underscore the point that inequality measures can be significantly affected by a failure to account for government transfers and employee benefits that presumably substitute for cash income.168 Given that healthcare costs have grown faster than inflation in recent years, a failure to account for health insurance benefits could significantly affect economic inequality measures. Reviewing estimates from the literature, Kaestner and Lubotsky find that including health insurance substantially reduces the gap between incomes at the high end of the distribution and those at the low end.169 Interestingly, however, the authors find that there is still an upward trend in inequality over time when the cash equivalent of health insurance and government transfers are included.170 The trend, however, is substantially muted.171 Specifically, including government transfers and the imputed value of employer subsidized health insurance, Kaestner and Lubotsky indicate that the ratio of income between households at the ninetieth percentile and the tenth percentile was about five in 1995, growing to 5.2 in 2004 and to 5.6 in 2012.172

Although yearly estimates of this more complete measure of income inequality are not available, and the time series span is somewhat limited, another approach might be to examine consumption inequality since consumption will be a function of effective income, and consumption data are more readily available. Also, consumption might be a better measure of welfare as argued by Bruce Meyer and James Sullivan.173 When determining the desirability of antitrust enforcement to address economic inequality, presumably one not only wants to examine the indirect effects on people’s incomes and wealth, but also the direct effect on consumer welfare, for which consumption might be a useful proxy.

Considering the arguments raised above regarding the desirability of using antitrust to fight inequality, one might reason that higher prices coming from increased concentration make both the well-off investors and executives and the lowly consumer worse off, but the investors and executives are compensated through high incomes due to their monopoly profits. Under these arguments, we should see an upward trend in the consumption ratio between the haves and the have-nots. Figure 4, which uses data on average consumption by households in the various income quintiles from the Bureau of Labor Statistics Consumer Expenditure Survey,174 shows that while the ratio has grown over time, the growth is much smaller than that found for income itself. Further, unlike income, the growth is not nearly as consistent with periods of increasing inequality and decreasing inequality alike.

Chart, line chart

Description automatically generated

Based on potentially better (i.e., more complete) measures of income and better metrics of welfare (i.e., consumption), perhaps the concerns raised in the papers discussed above are a little overblown. If so, perhaps the calls for a ramp-up of antitrust enforcement are not justified (at least on inequality grounds). That said, even by these measures, it appears inequality is growing, albeit slightly; therefore, it is worth discussing whether there is any association between antitrust enforcement and inequality.

### Inequality Low---2NC

#### Inequality’s declining.

Phil Gramm 21, and John Early; a former chairman of the Senate Banking Committee and a visiting scholar at the American Enterprise Institute; served twice as assistant commissioner at the Bureau of Labor Statistics; Wall Street Journal, 5/23/21, “Incredible Shrinking Income Inequality,” <https://www.wsj.com/articles/incredible-shrinking-income-inequality-11616517284>;

Twice over the past 50 years, the Census Bureau has significantly changed how it collects and records income statistics. In 1993 and 2013 the Census Bureau changed its methods in an effort to collect better information from high-income households. These changes created two major discontinuities and distorted the time-series so that the change in measured income inequality in those years was as much as 15 times the average annual change found for the entire 50-year period. At the time, the Census Bureau explained in detail what it had done. It also explained the limitations the changes imposed on the use of its income-inequality measure to look at changes over extended periods. In subsequent use of the data by the Census Bureau and others, however, those warnings have been neglected.

The simple solution would have been to isolate the distortions caused solely by the changes in data-collection techniques and adjusted the previous years’ measures to reflect the effect of the changes. We made these adjustments and they are shown in the nearby figure. The blue line is the actual reported Census Bureau measurement of income inequality. The yellow line eliminates the effects of the 1993 and 2013 discontinuities caused solely by changes in measurement technique. The black line shows income inequality when the value of all transfer payments received is counted as income, income is reduced by taxes paid, and the two technical corrections are made.

Lo and behold—income inequality is lower than it was 50 years ago.

The raging debate over income inequality in America calls to mind the old Will Rogers adage: “It ain’t what you don’t know that gets you into trouble. It is what you do know that ain’t so.” We are debating the alleged injustice of a supposedly growing social problem when—for all the reasons outlined above—that problem isn’t growing, it’s shrinking. Those who want to transform the greatest economic system in the history of the world ought to get their facts straight first.

#### Wealth inequality steady

Scott Lincicome 21, senior fellow in economic studies at the CATO Institute, “Lies, Damned Lies, and Inequality Statistics,” Cato Institute, 7-28-2021, https://www.cato.org/commentary/lies-damned-lies-inequality-statistics

Finally, we find similar definitional problems in the “wealth inequality” debate, which has been a prominent issue since Piketty’s 2014 book, Capital in the 21st Century, alleged a troubling historical rise in wealth concentration among the world’s richest people. As my Cato colleagues Ryan Bourne and Chris Edwards documented in 2019, however, numerous economists and other experts have found that the much‐​heralded book suffers from serious methodological flaws. They also find that subsequent work on wealth inequality from Piketty, Saez, and Gabriel Zucman substantially overstated the growth in U.S. wealth inequality since the mid‐​1970s due to several dubious methodological assumptions. (Feel free to read the paper for the details.) When other economists corrected those assumptions or used other (better) data, the troubling rise in wealth inequality becomes far less troubling: depending on the source, the share of wealth held by the “one percent” is essentially flat since the 1960s or up modestly in recent years. Bourne and Edwards conclude that U.S. wealth inequality is probably rising, but not nearly at the consistent and high speed we hear from the populists.

#### Low now

Scott Lincicome 21, senior fellow in economic studies at the CATO Institute, “Lies, Damned Lies, and Inequality Statistics,” Cato Institute, 7-28-2021, https://www.cato.org/commentary/lies-damned-lies-inequality-statistics

A brand new paper from the Boston Federal Reserve makes similar findings: standard measures of household net worth (and thus wealth inequality) routinely omit the value of retirement funds—defined benefit plans (e.g., pensions or annuities), defined contribution plans (e.g., 401ks or IRAs), and social security—and thus significantly understate the wealth of most Americans and overstate U.S. wealth inequality. When these widely‐​held benefits are included, the share of wealth held by the top 5 percent drops from about 72 percent to 45 percent in 2019, and its growth since 1989 goes from 18.2 percentage points (53.3% to 71.5%) to just 10.2 percentage points (35.2% to 45.4%). The Boston Fed authors also find—somewhat incredibly—that approximately one in four Americans aged 40 to 49 was a millionaire in 2019 when you include the present value of their retirement benefits in total their household net worth. (The total is almost certainly even higher today, given what’s happened to home prices and the stock market since 2019.) As economist David Weil notes, adding other forms of government “transfer wealth” would further improve these results.

So, once again, troubling depictions of wealth inequality—often cited to justify more government redistribution—become far less troubling after considering the full picture of people’s wealth, especially existing government redistribution programs.

#### Topline numbers don’t account for rising social benefits---pricing those in, inequality’s not growing

Catherine et al. 20, University of Pennsylvania, Law School & Wharton, “Social Security and Trends in Wealth Inequality,” SSRN Scholarly Paper, ID 3546668, Social Science Research Network, 02/29/2020, papers.ssrn.com, doi:10.2139/ssrn.3546668

9 Conclusion

Prior studies find large increases in U.S. wealth inequality over the last three decades based on measures of wealth concentration that exclude Social Security. This paper builds on past work by incorporating Social Security into inequality estimates. We find that top wealth shares have not increased once the old age retirement program is accounted for.

This is because Social Security wealth has risen: In 1989, Social Security represented 23.9% of the wealth held by the bottom 90% of the wealth distribution. By 2019, this share had grown to 66.1%. Even after adjusting for systematic risk, Social Security rose from only 20.0% of the total wealth of the bottom 90% to 59.4%.

Since Social Security and private wealth are substitutes (Feldstein, 1974), a narrow definition of wealth paints an incomplete picture of inequality trends. Our riskadjusted estimates suggest that between 1989 and 2019 the top 10% share declined by 2.9 percentage points and the top 1% share increased only slightly by 0.1 percentage points. This differs drastically from recent work that excludes Social Security and finds the top 10% and 1% shares rose by around 10 percentage points over this period.

Our focus here has been on the role of Social Security in top 10% and top 1% wealth shares, as these are objects of interest of the literature. Social Security is massively important for low and middle-income wealth, but less so for understanding the differences between those in the top of the distribution, where private wealth accumulation is likely the main driver of differences between groups.

The top wealth estimates in this paper are still overstated because we exclude programs like disability insurance and Medicare, which accrue disproportionately to the bottom of the wealth distribution. Overall, this paper shows that public transfer programs like Social Security make the U.S. economy more progressive, and it is important for inequality estimates to reflect this. Much more work is needed to arrive at a fuller understanding of wealth concentration in America.

### Inequality D---1NC

#### Inequality doesn’t cause war

Elise Must 16, PhD student at LSE, this was her PhD thesis, 8/1/16, “When and how does inequality cause conflict? Group dynamics, perceptions and natural resources”, http://etheses.lse.ac.uk/3438/1/Must\_When\_and\_how\_does\_inequality.pdf

Does economic inequality lead to conflict? This question has attracted the attention of prominent scholars at least since the time of Aristotle (Nagel 1974). The frequent assumption that unequal distribution somehow fuels rebellion has resulted in a vast amount of theoretical as well as empirical work. For long, results remained mixed. Despite countless qualitative studies asserting that inequality is a major reason for conflict outbreak, quantitative studies struggled to establish a firm relationship between the two (Blattman and Miguel 2010, Cramer 2005, Lichbach 1989).

These quantitative studies, including the most influential ones by Collier and Hoeffler (2004) and Fearon and Laitin (2003), rely on analysis of individual measures of inequality. However, as most prominently set forth by Frances Stewart, it is minority groups or collectives of individuals who rebel, not the whole population, nor individuals (Stewart 2002). Stewart’s theoretical development has given rise to several quantitative studies which uniformly support the role of economic group inequality in inducing conflict (Buhaug, Cederman, and Gleditsch 2014, Cederman, Weidmann, and Bormann 2015, Cederman, Weidmann, and Gleditsch 2011, Deiwiks, Cederman, and Gleditsch 2012, Østby 2008a, b, Østby, Nordås, and Rød 2009). Hence, there is an emerging consensus in the literature that inequality causes civil conflict when it overlaps with relevant group identities.

Promising as these studies are, they nevertheless neglect a potential crucial part of the inequality-conflict causal chain. Seemingly all studies of inequality and conflict, including those measuring group inequalities, are based on objective inequalities. Yet, as Stewart (2010, 14) herself notes, ‘People take action because of perceived injustices rather than because of measured statistical inequalities of which they might not be aware’. Economic inequality measured by the Gini coefficient, or by local GDP data, is most commonly used as proxies, leaving completely aside how economic inequality is actually interpreted and perceived by both groups and individuals (ref. Zimmermann 1983). It remains obvious, however, that in order for people to take action to address inequalities, the first step is to recognize them and to consider them unjust (Han et al. 2012). The use then, of objective measures in current empirical studies, is based on the assumption that both objective and perceived horizontal inequalities essentially amount to the same thing. Put another way it is assumed that all objective inequalities are actually perceived as inequalities by relevant groups, and conversely all perceived inequalities have an objective basis. These are strong claims that are so far largely untested. Existing studies of the link between objective and perceived horizontal inequalities range from concluding that there is no such link (Langer and Smedts 2013) to documenting imperfect correlations – ranging from 0.27 to 0.30 depending on indicators and datasets (Holmqvist 2012).

While cross-country analyses of conflict have neglected perceptions of inequality, the case study literature does offer some examples demonstrating their importance. Interviewing Muslim immigrants in London and Madrid, Gest (2010, 178) finds that what distinguishes democratic activists from those who engage in anti-system behavior, is the nature of their individual expectations and perceptions about shared economic realities. Moving on to larger conflicts, a recent World Bank report concludes that the so called ‘Arab Spring’ was driven by a decrease in popular subjective satisfaction, while the objective economic situation actually improved in the years before the widespread mobilization (Ianchovichina, Mottaghi, and Shantayanan 2015). The report also points to the importance of inter-group inequality as opposed to individual inequality.

My main argument is that in order to better capture the role of inequality in inducing civil conflict, measures have to account for relevant groups as well as for the perception of inequality in these groups. In addition, my analyses fill two other gaps in the literature. While Stewart emphasizes how groups can mobilize around different identities, current studies have almost exclusively focused on ethnic groups. However, a regional identity might be just as relevant (ref. Posner 2004). I will therefor look at the effect of regional economic inequality on civil war. And finally, most of the studies, and all of those with a global scope, rely on time invariant measures of economic horizontal inequality. This is commonly defended by referring to the demonstrated ‘stickiness’ of horizontal inequalities (see e.g. Stewart and Langer 2008, Tilly 1999). Still, a recent study covering 1992 to 2013 demonstrates a global decline of ethnic inequality (Bormann et al. 2016), while Kanbur and Venables (2005) compare case studies of 26 developing countries and conclude that regional inequalities are rising. The data used in this analysis also show that horizontal inequalities change quite substantially over time. Using inequality data from one particular year to analyze decades of conflict incidents is therefore questionable. Hence, my study represents the first time-variant analyses of the effect of both objective and perceived regional inequality on civil war covering developed and developing countries in all world regions14 .

Analysing data for the period 1989 to 2014 from the World Values Survey (WVS), I find that countries with a high level of perceived regional economic inequality have an elevated risk of civil war outbreak. On the other hand, mere objective regional economic inequalities do not have any significant effect. The group aspect remains essential, as neither objective nor perceived individual inequality is linked to increased civil conflict risk.

### Inequality D---2NC

#### Inequality doesn’t cause diversionary war

Gal Ariely 16, senior lecturer in the Department of Politics & Government, Ben-Gurion University of the Negev, PhD from the University of Haifa’s School of Political Sciences, “Does National Identification Always Lead to Chauvinism? A Cross-National Analysis of Contextual Explanations,” Globalizations, vol. 13, no. 4, Routledge, 07/03/2016, pp. 377–395

With respect to internal explanations, the effects of income inequality and ethnic diversity are presented in Table 3. Models 3.1 and 3.2 indicate that neither directly affects chauvinism. H4 is therefore not supported. The results suggest, however, that both have a negative effect on the national-identification slopes. Contrary to our expectations, countries with higher levels of economic and ethnic division appear to exhibit a weaker relation between national identification and chauvinism. While these findings might seem to contradict H5, the pattern was caused by outliers. After excluding South Africa—the most unequal and ethnic diverse country in our sample—the effect of ethnic diversity is not even of borderline significance. After excluding Chile—the most unequal country in our sample—the interaction effects for economic inequality were also far from significant. The results, therefore, do not support H5.21

Conclusions

During the historic phone call between President Obama and Iranian President Sheikh Hasan Rouhani in September 2013, the latter stated that his country’s nuclear program ‘represents Iran’s national dignity’.22 This declaration reflects the common perception that Iran’s nuclear program mobilizes Iranians in support of resisting further national humiliation at the hands of foreigners (Moshirzadeh, 2007). This reflects the important role national feelings play in the contemporary international arena. Evidence from other examples—such as the Israeli-Palestine conflict—indicates that national identity serves as a key factor in conflict resolution. The prominence of national feelings is not limited to the Middle East, their effect on public attitudes towards international issues, and conflicts also being manifest in the West (Billig, 1995; Kinder & Kam, 2010).

It is thus hardly surprising that scholars seeking to develop a better understanding of conflicts adopt a social-psychology perspective, replacing the deterministic view that identification with one’s in-group necessarily leads to antagonism towards out-groups with an examination of the broader social context. In line with this approach, the present paper focuses on the way in which political and social contexts encourage chauvinistic views towards the international arena and how they affect the relation between national identification and chauvinism.

Integrating various social and psychological theories, we investigated two external contextual explanations (globalization and conflict) and an internal explanation (social division). Employing cross-national survey data, we examined the relation between national identification and chauvinism across 33 countries. The findings indicate that a positive relationship exists between national identification and chauvinism across most of the countries, although the level differs from country to country. Using a multilevel regression analysis, we tested to see whether globalization, conflict, and social division correlate with this variation. The results indicate that social and political contexts are related to chauvinism and the ways national identifi- cation and chauvinism are linked. Although a closer relation exists between national identification and chauvinism in more globalized countries, globalization failed to explain the variation in chauvinism itself. These findings support the notion that globalization highlights the importance of national identity (Calhoun, 2007; Castells, 2011). While those sections of globalized societies that are attached to their country also tend to resist international cooperation and endorse hostile views, the complexity of the phenomenon—as evinced by the divergent findings of previous studies (e.g. Jung, 2008; Norris & Inglehart, 2009)—calls for further research of this interpretation. The fact that the current study is cross-sectional must also be taken into account, the findings adducing the relation but not the causal relations between the variables. In contrast to experimental studies, the present design is similarly limited in its ability to offer a robust control for alternative explanations.

Another external factor found to be relevant—to a certain degree—was conflict. Countries that suffered large numbers of deaths in conflicts and mobilized resources and personnel exhibited higher levels of chauvinism. When other indices for conflict were used, however, these results were not replicated. A possible explanation for this finding lies in the inherent limitation in the way in which conflicts are measured across various countries. Measuring international conflicts is a challenging task (Anderton & Carter, 2011). While the ways of measuring conflict were chosen because they reflect different dimensions of conflict in order to be representative of a wide range of countries, the problem of comparability cannot be ignored. An alternative explanation may derive from the fact that only deaths from conflict and resources/personnel mobilization are sufficiently significant to contribute to chauvinism. The limitations of our measurements of conflict and research design mean that this idea must remain speculative, however. In addition, it is important to emphasize that the sample of countries is also limited as many countries are not involved in conflict and there is also limited variation in the types of conflicts.

Contrary to what the divisionary theory of national mobilization would lead us to expect, neither economic inequality nor ethnic diversity were related to chauvinism or affected the relation between national identification and chauvinism. This finding might also be explained by the limitation of the current research design. The number of countries included in the ISSP 2003 National Identity Module being relatively small and the sample only covering countries with available survey data, the results relate solely to this specific sample of countries. Across another set of countries, social division might play a far more significant role. Another explanation might be the meaning given to national identification and chauvinism across the countries. While evidence exists for the comparability of the scales across most of the countries, the divergent meaning probably attributed to them in Germany, the United States, and Israel might form an additional limitation.

#### The best empirical evidence disproves the inequality-crisis link---their authors are way outside the academic consensus

Michael D. Bordo 12, Professor of Economics and Director of the Center for Monetary and Financial History at Rutgers University, PhD from the University of Chicago, and Christopher M. Meissner, professor of economics at UC Davis, PhD in Economics from UC Berkeley, “Does Inequality Lead to a Financial Crisis?” NBER Working Paper No. 17896, March 2012, <http://www.nber.org/papers/w17896.pdf>

The recent financial crisis in the U.S. has been attributed to a rise in inequality by several authors. In his 2010 book, Fault Lines, Raghuram Rajan argued that rising inequality in the past three decades led to political pressure for redistribution that eventually came in the form of subsidized housing finance. Political pressure was exerted so that low income households who otherwise would not have qualified received improved access to mortgage finance. The resulting lending boom created a massive run-up in housing prices which reversed in 2007 and led to the banking crisis of 2008.¶

Along these lines, Kumhof and Rancière (2011) study the links between inequality, credit and crises complementing the Rajan hypothesis with a DSGE model. In this model, rising inequality and stagnant incomes in the lower deciles lead workers to borrow to maintain their consumption growth. As these households become increasingly indebted, they continue to borrow more to maintain their consumption. This increases leverage, and eventually a shock to the economy leads to a financial crisis. They posit that their story holds both for the 1920s stock market boom in the US and the run up to the 2008 crisis. The focus on income inequality by Kumhof and Rancière and Rajan is a novel approach to understanding macroeconomic outcomes prior to the recent financial crisis, and to the Great Depression. The theme deserves further empirical scrutiny from other time periods and countries.¶

There is reason to wonder about the generality of this new view since income inequality rarely plays a significant role in the large literature on financial instability and credit booms. Mendoza and Terrones (2008) study the experience of a large number of advanced and emerging economies since the 1960s finding that current account deficits, strong economic growth and fixed exchange rates accompanied credit booms. Borio and White (2003) have also elaborated a view of pro-cyclical financial systems. Periods of expected low and stable inflation, strong economic growth and liberalized finance can give rise to complacency amongst borrowers, lenders and regulators. Endogenous market forces that might normally “rein in” these imbalances seem to be absent. Massive buildups in credit lead to financial instability in this case. Income inequality plays no active role in generating the boom-bust outcome in these contributions. ¶

In this paper, we present new empirical evidence on whether rising inequality has any explanatory power in accounting for credit booms and financial crises. Rather than limiting the focus to inequality as the Rajan/Kumhof/Rancière (RKR) frameworks do, we control for more traditional determinants of the credit cycle. Different from these authors, we also bring evidence from a much larger sample than the two unique periods in US economic history that are the focus of RKR. Our sample is a panel of 14 mainly advanced countries from 1920 to 2008 covering a wide variety of boom-bust episodes and financial crises.¶

We find very little evidence linking credit booms and financial crises to rising inequality. Instead, the two key determinants of credit booms are the upswing of the business cycle or economic expansion and low interest rates. This is very much consistent with a broader literature on credit cycles. While inequality often ticks upwards in the expansionary phase of the business cycle, this factor does not appear to be a significant determinant of credit growth once we condition on other macroeconomic aggregates. Neither is income concentration a good predictor of the financial crises that often follow above average growth in credit. The anecdotal evidence from several historical credit booms finds little support for the inequality/crisis hypothesis.

### Populism D---1NC

#### No impact to populism.

Tjitske Akkerman 17, Assistant Professor in the Department of Political Science at the University of Amsterdam, the Netherlands, “Populism is overrated – if there is a threat to democracy, it’s from authoritarian nationalism”, https://blogs.lse.ac.uk/europpblog/2017/07/31/populism-is-overrated-if-there-is-a-threat-to-democracy-its-from-authoritarian-nationalism/

Populism is perhaps the most overrated concept today. The presumption that populism is [threatening to destabilise](https://blogs.lse.ac.uk/europpblog/2017/07/24/is-populism-really-a-threat-to-democracy/) democratic regimes in Europe abound in the media as well as in academia. Populism is, as Cas Mudde has argued, not anti-democratic but against liberal democracy. It endorses the ideal of a majoritarian or popular democracy, based on the general will of the people. Yet, this potential threat to liberal democracies is merely hypothetical.

There is a current wave of populism in Europe and there is pressure on liberal freedoms in many European countries, but is populism a significant cause of the current pressures on liberal democracies? To identify threats (or correctives if you like) to liberal democracies it is important to assess the impact of populism instead of assuming it. Research [indicates](https://www.amazon.co.uk/Handbook-Political-Populism-International-Studies/dp/3848725347) that populist parties have had little impact on democratic institutional reform in Western Europe so far. With predominantly proportional electoral systems and coalition governments in which populist parties are most often still junior partners, significant opposition of courts, parliaments and civil societies, liberal democracies in Western Europe overall provide resilient contexts.

However, this still leaves open the possibility that populism has been a major force behind the establishment of illiberal regimes in Hungary, Poland or Latin America, and that it may still grow into such a force in Western Europe. My arguments to question the potential impact of populism on liberal democracies are more general.

First, populism is not a core ideology of political parties or movements in Europe. Neither populist parties nor their voters tend to give much weight to issues of democratic reform. Dissatisfaction with politics is a marginal reason for voters in Western Europe to vote for radical right-wing parties, and dissatisfaction [does not play a role at all](https://www.cambridge.org/core/journals/european-political-science-review/article/what-unites-the-voter-bases-of-populist-parties-comparing-the-electorates-of-15-populist-parties/2C93B9C18341B38768DF216604FDBBA2) as a motivation to electorally support left-wing populist parties. Like their voters, populist parties do not give much salience to issues of democratic reform. For radical right-wing populist parties, for instance, proposals to introduce direct forms of democracy or to reform the judiciary tend to be instrumental to anti-immigration policies and security issues. Nationalism and authoritarianism are much more important ideological sources for these parties than populism. For left-wing populist parties, it is still to be seen whether they aim to reform liberal democracies into popular democracies.

Second, not all populist parties are against liberal democracy. Some parties are merely rhetorically populist. The Dutch Socialist Party (SP), for instance, is widely regarded as a populist party. Surely, the party often contrasts the good people to corrupt elites like bankers, but the SP is also committed to a liberal democracy. This is in contrast to Geert Wilders’ radical right-wing Party for Freedom (PVV) that is not only rhetorically populist, but also shows little commitment to liberal democracy.

Third, the pressure on liberal democracies is not restricted to populist parties. Policy proposals and legislative initiatives that are in tension with or defy fundamental freedoms are also coming from mainstream parties. Systematic comparative research is still lacking, but a [case](https://onedrive.live.com/?authkey=%21AA%2DLdY9e5QxvFfY&cid=114B34C23EB324FB&id=114B34C23EB324FB%21622&parId=root&o=OneUp) [study](https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/immigratierecht/rapport-rechtsstaat-def.pdf) of the Netherlands makes clear that policies that are in conflict with the rule of law are not restricted to populist parties.

### Populism D---2NC

#### The stuff their authors are freaking out about is inherent to democracy and has happened forever.

James Miller 18, professor of liberal studies and politics, and faculty director of creative publishing and critical journalism at the New School in New York, “Could populism actually be good for democracy?”, The Guardian, 10/11/18, https://www.theguardian.com/news/2018/oct/11/could-populism-actually-be-good-for-democracy

Current affairs may seem especially bleak, but fears about democracy are nothing new. At the zenith of direct democracy in ancient Athens, in the fifth century BC, one critic called it a “patent absurdity” – and so it seemed to most political experts from Aristotle to Edmund Burke, who considered democracy “the most shameless thing in the world”. As the American founding father John Adams warned, “there never was a democracy yet that did not commit suicide”.

For almost 2,000 years, most western political theorists agreed with Aristotle, Burke and Adams: nobody could imagine seriously advocating democracy as an ideal form of government. It was only at the end of the 18th century that democracy reappeared as a modern political ideal, during the French Revolution.

Ever since, popular insurrections and revolts in the name of democracy have become a recurrent feature of global politics. It needs to be stressed: these revolts are not an unfortunate blemish on the peaceful forward march toward a more just society; they form the heart and soul of modern democracy as a living reality.

It is a familiar story: out of the blue, it seems, a crowd pours into a city square or gathers at a barnstorming rally held by a spellbinding orator, to protest against hated institutions, to express rage at the betrayals of the ruling class, to seize control of public spaces. To label these frequently disquieting moments of collective freedom “populist”, in a pejorative sense, is to misunderstand a constitutive feature of the modern democratic project.

Yet these episodes of collective self-assertion are invariably fleeting, and often provoke a political backlash in turn. The political disorder they create stands in tension with the need for a more stable, peaceful form of collective participation. That is one reason why many modern democrats have tried to create representative institutions that can – through liberal protections for the freedom of religion, and of the press, and the civil rights of minorities – both express, and tame, the will of a sovereign people.

Thus the great French philosopher Condorcet in 1793 proposed creating a new, indirect form of self-rule, linking local assemblies to a national government. “By ingrafting representation upon democracy,” as Condorcet’s friend Tom Paine put it, the people could exercise their power both directly, in local assemblies, and indirectly, by provisionally entrusting some of their powers to elected representatives.

Under the pressure of events, another ardent French democrat, Robespierre, went further and defended the need, amid a civil war, for a temporary dictatorship – precisely to preserve the possibility of building a more enduring form of representative democracy, once its enemies had been defeated and law and order could be restored.

But there was a problem with these efforts to establish a modern democracy at scale. Especially in a large nation such as France or the US, representative institutions – and, even worse, dictatorial regimes claiming a popular mandate – inevitably risk frustrating anyone hoping to play a more direct role in political decision-making.

This means that the democratic project, both ancient and modern, is inherently unstable. The modern promise of popular sovereignty, repeatedly frustrated, produces recurrent efforts at asserting the collective power of a people. If observers like the apparent result of such an effort, they may hail it as a renaissance of the democratic spirit; if they do not, they are liable to dismiss these episodes of collective self-assertion as mob rule, or populism run amok.

No matter. Even though the post-second world war consensus over the meaning and value of liberal democratic institutions seems more fragile than ever – polls show that trust in elected representatives has rarely been lower – democracy as furious dissent flourishes, in vivid and vehement outbursts of anger at remote elites and shadowy enemies.

### Populism D---AT: Leigh 21

#### The whole book is just a bunch of pessimistic bullshit

Joshua Gans 21, PhD in Economics from Stanford, Jeffrey S. Skoll Chair of Technical Innovation and Entrepreneurship, Professor of Strategic Management @ University of Toronto, “How bad can it all be?”, https://joshuagans.substack.com/p/how-bad-can-it-all-be?s=r

In this book, Andrew decides to consider the worst outcomes that might befall us. You know the list. Pandemics, climate catastrophe, nuclear annihilation, asteroids, totalitarianism, and AI superintelligence. He looks at each and then looks at the probabilities that each of these things might wipe us out. On climate change, those probabilities are pretty precise on something but for the rest, it is really hard to tell. But each, in his mind, is a significant enough risk that if we look at people’s more ordinary risk-taking behaviour, they surely wouldn’t choose to live with that risk. Now Andrew misses the most likely risk — alien attack (I basically believe [Liu Cixin](https://www.goodreads.com/book/show/20518872-the-three-body-problem) was essentially right) but I think his “politician’s constraint” would prevent him from really dealing with that one. And what can we do about it anyhow?

I’m not going to spoil the details. If you want to remind yourselves of our peril, that is the job of this book. But I have to admit that I found myself more optimistic on each of these than Andrew at least in terms of these things wiping out humanity entirely — you know, the existential part of existential risk. That may have been a past risk but we have ways of dealing with that now. In reality, each of these is more along the lines of wiping our progress, prosperity and our way of life for ourselves and our descendants which is an outcome that is not that far about existential risk anyway.

What I want to focus on was Andrew’s “solution.” He didn’t offer a real solution but a place to look. And it wasn’t economics, it was all about politics. Andrew puts forward two theses. First, that democracy is the way to solve these risks. And second, it would be better if we would all calm down and become more stoic which has a philosophical underpinning but basically means we should be less greedy, more kind and slow the f\*\*k down. He proves neither and nor could he. It is an opinion.

When I thought about it, neither was obvious to me. On being stoic, that seems the opposite of the degree of panic that we surely need to deal with some of these issues. There is a case for being much more worried.

And on democracy, each of these likely messes, it seems like they have absolutely happened on democracy’s watch. There is simply no straightforward case that democracy will solve any of these things even if we may feel better believing it will. On nuclear issues, Andrew argues that we need a few sane people in charge. In my mind, the more distributed the decision-makers the less likely it is we will have total annihilation even if we may lose a city or two. On climate change, we are putting all our eggs on stopping it even as the science tells us there is now little we can do and so should instead be adapting to our warmer and more chaotic climate.

But these thoughts are the point. The book wants us to think about this and not necessarily agree with the author. And, in particular, he wants those in power to think about it. He has served it up nicely for them. I hope they take notice.

## Degrowth ADV Answers

### Hegemony Turn---1NC

#### Degrowth collapses hegemony.

Jamie Kendrick & Olivia Lazard 23, Kendrick is editor-in-chief of the Green European Journal, a political magazine of green ideas and analysis; Lazard is a fellow at Carnegie Europe and researches the geopolitics of climate-disrupted futures and ecological breakdown, “Olivia Lazard: 'Degrowth needs a strong geopolitical and geo-economic proposition',” EU Observer, 5/12/23, https://euobserver.com/growth-week/157026

What would the geopolitical consequences of degrowth be for the European Union?

If you start changing international economic relationships, removing some value and potentially bringing back production to Europe, then you may weaken partners outside of the EU. These partners are not just economic but political partners. Certain countries built their economies and social fabrics on Western demand, so degrowth needs to be co-designed and co-assessed. This is not something that we have started doing.

There is another question about the connection between economic growth and security. In political theory 101, we learn that the state is defined by the monopoly of violence. To have a monopoly on violence, we need to invest in military, security and defence systems. If you look at the wider global constellation, we see China, Russia and the United States investing more and more in military capabilities. So, from the perspective of people who are in charge of security, now is not the time to rock the boat. Degrowth could mean stepping away from the socioeconomic stability that allows the nation-state to invest in security.

To my understanding, the degrowth movement has only started to peel at these questions.

The current circumstances are very delicate and an ideological degrowth agenda only focused on planetary health without understanding how human systems organise themselves is counter-productive. It runs against the role degrowth can play in systemic planetary and human security.

### Sustainability---1NC

#### Growth solves sustainability; degrowth derails it.

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Introduction: the problem of decoupling

To keep global temperature increases to no more than 1.5°C above pre-industrial levels, net global carbon dioxide emissions must be reduced to zero by mid-century (IPCC, 2018). If emissions do not decline sharply during this decade, carbon neutrality will need to be reached even earlier to keep cumulative CO2 emissions within the same carbon budget (IPCC, 2021). Meanwhile, other greenhouse gas (GHG) emissions must be similarly slashed (IPCC, 2018).

Economic growth has so far driven emissions mainly because higher levels of economic activity require more consumption of energy, of which 79% globally is still produced by burning fossil fuels (IEA, 2021c). The energy sector accounts for nearly all CO2 emissions and around 73% of global GHG emissions, making it central to solving the climate crisis (Ritchie and Roser, 2020).

This poses a problem best explained by Holdren and Ehrich’s (1974) ‘I=PAT’ identity:

GHG emissions = population \* (GDP / population) \* (GHG emissions / GDP)

If one considers population growth as a given, then cutting emissions boils down to either reducing gross domestic product (GDP) per capita – as proposed in a vigorous literature on ‘degrowth’ (eg, Kallis et al, 2018; Wiedmann et al, 2020) – or accelerating the decarbonisation of GDP, in other words ‘decoupling’ GDP growth from emissions. A decline in emissions per unit of real GDP can be driven by improvements in energy efficiency, by behavioural change or an economic shift towards more services, or notably by a push for renewable energy that decreases the carbon intensity of energy.

Governments and international organisations have long argued that suitable policies that support green investment and technological progress will permit taking the second path to net zero, sometimes even while boosting GDP growth (Bowen and Hepburn, 2014). Examples of such policies are carbon prices or taxes that discourage fossil fuel consumption, subsidies and investments in renewables, industrial policies to accelerate technological change combined with tax reductions or compensations for poor households (eg European Commission, 2019; OECD, 2011; IMF, 2020). This narrative is referred to as ‘green growth’.

On the other hand, degrowth proponents argue that the material size of the global economy and therefore GDP must be scaled down to reduce emissions. This means acting on the second factor in the identity above, particularly in rich countries (it is important to note here that degrowers generally do not consider population control as an option, see Cosme et al, 2017). To do so, radical economic reforms are needed that limit and redirect the supply of labour, natural resources and capital through work sharing, ‘cap-and-share’ systems and possibly the abolishing of interest and limitations to saving and property rights, which should eliminate the logic of accumulation (Kallis, Kerschner and Martinez-Alier, 2012). Large scale national and international redistribution is needed to protect the most vulnerable people, especially in developing countries. A focus on quality of life through more spare time, ‘conviviality’ and social justice reflects an alternative look at prosperity (Kallis et al, 2018).

2 Green growth or degrowth?

Green growth has clearly not materialised to date. That would require a fast ‘absolute decoupling’ of global emissions and GDP, meaning that GHG emissions decline while real GDP continues to grow. Instead, there is only ‘relative decoupling’, whereby global emissions continue to rise but at a slower pace than global GDP, because the carbon intensity of GDP is declining. This is illustrated in Figure 1, which shows that over the last 100 years energy-related CO2 emissions have risen tenfold despite a steady decline (about two thirds) in emissions/GDP. This is simply because global economic growth has outpaced the speed of decarbonisation.

Chart, line chart

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If humanity wants to continue pursuing economic growth while reducing emissions, unprecedented and urgent efforts will need to be made to accelerate decoupling. Degrowth proponents do not think such a change is possible, and they rightly highlight the gap between current actions and available technological tools on the one hand and what limiting climate change requires on the other hand (see IEA, 2021a), as well as policy uncertainties regarding the existence of rebound effects from energy savings, failing compliance with environmental regulations and burden-shifting whereby one environmental problem is replaced by another (eg GHG emissions by natural resource depletion for renewable energy infrastructure) (Hickel and Kallis, 2020; Antal and van den Bergh, 2016).

However, degrowth proposals are as much plagued by uncertainty as green growth policies, if not more. For example, it is impossible to know how technologies will evolve. Successive technological breakthroughs have disproven alarmist rhetoric about imminent economic collapse, going from Malthus to Paul Ehrlich’s (1968) ‘population bomb’ and ‘Limits to Growth’ (Meadows et al, 1972). Degrowth may therefore not be necessary to begin with. Moreover, one could ask whether the systemic changes prescribed by degrowth theory are conducive to technological progress, which will in any case be needed to reduce emissions, or whether poorer societies will revert to cheaper, less efficient technologies, thus offsetting emission savings through a higher third factor in the I=PAT identity (van den Bergh, 2011). Most importantly, it is unlikely that either advanced or developing economies would accept and implement the radical and often ideologically driven propositions embedded in the degrowth literature, which some degrowth authors themselves acknowledge (Kallis et al, 2018). We are also concerned that, while GDP is a flawed measure of wel fare, alternative conceptions do not diminish the very real welfare effects of a GDP decline through problems with debt sustainability and social security financing. Because the world is interconnected, it is unclear what the external implications would be for countries that went down a degrowth path alone. It therefore seems that, while green growth policies are indeed not guaranteed to result in timely decarbonisation and unprecedented efforts are required to accomplish it, there might not be a feasible alternative for the world, bar coercion. It may therefore be better to think about what must be done to maximise the odds of success.

3 Green growth policies needed

Fortunately, there are good reasons to believe that much faster decarbonisation of global energy production is increasingly feasible. Over the last few decades, the EU, the US and other developed countries put in place substantial incentive schemes for renewable energy deployment, such as feed-in-tariffs schemes (IEA, 2020a). These measures have spurred a large-scale deployment of solar and wind energy technology, which pushed their costs down by 85% and 68% respectively over the last decade, ultimately making them cost-competitive vis-a-vis traditional energy sources even without subsidies (Figure 2). Both economies have achieved absolute decoupling, even when accounting for ‘consumption-based emissions’ abroad, albeit not yet at a sufficient speed (Friedlingstein et al, 2020). This success story now provides an opportunity to emerging and developing economies to power their economic growth also on the basis of competitive green technologies (IEA, 2021b).

[FIGURE 2 OMITTED]

Still, massive investment will be needed to decarbonise the energy system and to improve energy efficiency and accelerate decoupling. The International Energy Agency (2021d) estimated the investment need to be around 5 tn USD per year by 2030 (in 2019 prices), with similar levels for decades after. This is a jump of 2 percentage points of real GDP from today’s levels, in line with other estimates (European Commission, 2020; Darvas and Wolff, 2021). To make such an investment increase happen, public investments and rigorous policy measures such as carbon pricing and enabling financial regulation will be necessary.

Degrowers argue that while investments have to decline in a degrowth scenario, this does not exclude that sustainable investment grows at the expense of other, unsustainable investments (Kallis et al, 2018). However, it is difficult to see how a global economy several times smaller than today can generate this sort of investment alongside other increasing investment needs such as in education, health care or adaptation to climate change. Moreover, the private sector will have to mobilise most of the required investments, as government budgets are too limited (Darvas and Wolff, 2021). Undermining property rights and financial stability by defaulting on debt hardly sounds like a good way to make that happen.

It will also be necessary to accelerate breakthrough innovation to reduce the costs of green technologies in areas where they are currently not price competitive and economic actors continue to rely on fossil fuels. Most of the technologies needed in the short term to accelerate decoupling are available. After 2030, however, only 54% of the necessary emission reductions can be accomplished with current technologies (IEA, 2021d). Green hydrogen, advanced battery storage capacity and, more controversially, technologies that extract CO2 from exhausts or straight from the atmosphere will be key instruments for decarbonisation but remain insufficiently developed or prohibitively expensive. More research funding, public-private cooperation, better functioning capital markets for risk capital and green industrial policy may trigger the much-needed breakthrough innovation (Aghion et al, 2016; Tagliapietra and Veugelers, 2020). Our criticism of degrowth applies here as well.

Finally, we do agree with degrowers that behavioural change will be needed. This must be encouraged through regulation and pricing. Air travel, for example, will not be carbon neutral any time soon, nor will agriculture and land use, which emit other greenhouse gasses such as methane. New ways of travelling and providing nutrients will have to be adopted. This could also make the transition to climate neutrality significantly cheaper (European Commission, 2018).

4 International trade and cooperation

We wrote above that there are several uncertainties and problems with degrowth proposals, including that they are most likely politically impossible but also undesirable from a social and perhaps even environmental point of view, as they may inhibit the substantial investment and technological progress that will in any case be needed for a quick decarbonisation. We also briefly referred to problematic effects on external economic relations (eg, debt repayments), should a single country or region attempt to pursue degrowth policies in a world that sticks to the growth paradigm. It is difficult to see how such an experiment will not lead to economic isolation. In fact, economic isolation seems to be a deliberate feature of degrowth, as it also argues for the re-localisation of economies to shorten the distance between consumers and producers, and the use of regional money (Paech, 2012).

There is much legitimate debate about shorter supply chains and strategic autonomy today, for environmental reasons but also for better resilience to disruptions, as we saw during the pandemic, and for geopolitical reasons, as most recently in the context of Russia’s invasion of Ukraine. However, as evidenced by the ‘open’ strategic autonomy advocated by the EU and the recent Global Gateway initiative, it will not be possible for the world, and especially for Europe, to achieve its aim of limiting climate change without international trade and cooperation (European Commission, 2021a and 2021b).

Trade is necessary firstly because the push for net zero emissions relies on the deployment of solar panels, wind turbines, li-ion batteries, electric vehicles etc, all of which require raw material inputs from abroad, since Europe has no significant stocks or processing capacities of its own. The EU’s dependence on imports is very large: it produces only 3% of the raw materials needed in batteries and fuel cells (JRC, 2020). Despite efforts to promote the circular economy, which would reduce this dependence, it is likely that Europe’s reliance on China for critical raw materials will increase, from already very high levels (60% in 2010–2014). Diversification will therefore need to be pursued as much as possible. Moreover, Europe will still need to import energy from abroad like it does today, but rather than importing gas and oil from countries like Russia, it might buy electricity and green hydrogen from nearby countries with a high potential for solar energy, like the southern Mediterranean region (Leonard et al, 2021).

Secondly, the example above suggests that through trade, decarbonisation efforts in Europe and other developed regions can support environmentally sustainable development in partner countries. The case of Europe’s southern neighbourhood is important, as the region depends heavily on trade relations with Europe, particularly fossil-fuel exporting countries like Algeria. As Europe consumes less fossil fuels, turning to exporting renewable energy can compensate for the lower oil and gas revenues in these countries. If, however, European member states were to implement degrowth proposals, not only would the revenue from fossil fuels export decline, but there would also not be much new demand for renewable energy to compensate the loss of revenue, or much other demand for exports in fact. The result could be increased poverty and instability in Europe’s neighbourhood (Leonard et al, 2021).

Thirdly, trade plays an important role in fostering innovation and in the geographical diffusion of technology, though the latter role would likely be replaced by technology transfers in a degrowth vision. The development of solar PV is a case in point, since international ‘sharing of responsibility’ for different innovation stages accelerated the development process and created the condi­ tions for a global supply chain, economies of scale and ultimately a steep drop in prices (IEA, 2020a).

Aside from trade, the EU and other developed countries also need to cooperate with the rest of the world to achieve global decarbonisation. Financial support is a key element of this cooperation, as developed countries have committed to providing 100 bn USD per year to developing countries for mitigation and adaptation. This target has not been reached so far and is still much smaller than the total financing needs for developing countries’ declared climate plans, which according to the UNFCCC (2021) could run up to a cumulative 5.9 tn USD by 2030. The need for increased support from rich countries makes political support for degrowth even less likely in our view.

Finally, it is good to note that trade and international cooperation are connected. Countries leading the transition to net zero can use trade agreements and other tools to encourage climate laggards to do more. For example, the European Commission (2021b) proposed to make adherence to the Paris Agreement a key condition in any future EU trade agreement. More broadly, countries are incentivised to align to stringent EU environmental standards to be able to trade freely with the EU (Goldthau, 2021). Moreover, the proposed Carbon Border Adjustment Mechanism has the dual purpose of preventing carbon leakage by trade and of incentivising other countries to effectively reduce the carbon footprint of their economies. The strength of all these measures crucially depends on the size of EU’s economy and on trade opportunities. For that reason, a ‘climate club’ whereby the EU and the US would create a common carbon border tariff could be particularly helpful in boosting international climate action (Tagliapietra and Wolff, 2021).

5 Conclusion

Global efforts to reduce emissions of GHG are not nearly enough to limit global warming to 1.5°C. As a consequence, economic growth is still associated with rising emissions. The debate about whether this nexus can be severed is ongoing and is useful to grasp the significance of the challenge the world faces. However, even if world-wide green growth still seems a remote prospect, there is even more reason to doubt whether degrowth proposals will bring solace, if only because they are simply not politically feasible for the vast majority of societies. European and other developed countries have shown that green policies can work to combine economic growth and emission reductions, but much more is needed to mobilise massive investments in green energy and generate faster technological progress, and some behavioural change seems unavoidable. Trade and international cooperation are also essential. Not least the EU will need to trade to get the necessary inputs for its green transition, but it can use its trade power and regulatory influence to move reluctant countries towards more climate action.

### Sustainability---2NC

#### Disaggregated analysis proves no peaks and yes absolute decoupling

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Does humanity’s growing use of materials mean that decoupling is impossible? In a word, no, and attempts to reduce all resource and environmental problems to our material footprint won’t help us solve problems of resource scarcity or environmental impacts. In a recent article for Fast Company, the University of London’s Jason Hickel claims that humanity can only consume 50 billion tons of “stuff” each year (compared to current consumption levels at about 80 billion tons). And according to several papers that Hickel cites, that can’t be achieved in the foreseeable future, given growing populations and economies. The only solution, according to Hickel, is to ditch our addiction to GDP growth. Hickel is challenging the concept of “green growth,” which he describes as “absolute decoupling of GDP from material use.” But before talking about evidence for or against decoupling, it's important to ask: decoupling of what? Broadly, there are two reasons to worry about consumption: running out of materials (like fossil fuels) and environmental impacts (like pollution or habitat loss). These often get conflated in unhelpful ways. What Hickel refers to when he talks about decoupling is material flows, which are dominated by things like fossil fuels, metal ores, construction minerals, biomass, and the like. Lumping different material flows together can be misleading, in that it groups together resources that are being used sustainably with those that aren’t, and/or resources that cause big environmental impacts with those that cause smaller environmental impacts. So let’s look at the materials at play here. For several of the materials with the biggest footprint in terms of volume (construction minerals, metal ores, etc.), the problem isn’t really that we're at risk of running out of stuff. Construction minerals account for a large portion of global material flows, but those are resources like stone — last time I checked, we weren't approaching peak stone. (Cue joke about the end of the Stone Age.) We could have a perfectly sustainable civilization without absolutely decoupling from stone for a long time. The 50 billion tons limit is completely arbitrary — it was based on material consumption in the year 2000 — and shouldn’t be taken as the dividing line between sustainability and environmental doom. What about environmental impacts? Here, too, aggregate resource consumption can give a misleading picture. Some of the big items in material flows (again, like construction minerals) account for a pretty small portion of environmental impacts like greenhouse emissions or land use. For biomass, we've managed to increase production and thus mass flows a lot using the same amount of land, so the impacts haven't gone up in proportion to the mass flows. When we look at the actual impacts — like greenhouse emissions, habitat loss, pollution of air and water, and so on — we're seeing some positive trends, and in fact some instances of absolute decoupling. Emissions of several pollutants (like sulfur dioxide) have peaked and declined globally, although they are still going up in some developing nations; nitrogen oxides and nitrous oxide emissions are flat globally. Total farmland area (the most important driver of biodiversity and habitat loss and an important driver of carbon emissions) has peaked, although it's plausible that it will go up again. Water extraction peaked several decades ago in the United States, in spite of increasing industrial and agricultural output. Greenhouse emissions have not peaked globally, and may continue to go up for a while, making carbon emissions perhaps the least decoupled and most concerning of all trends. Even relative decoupling has come to a halt as coal-heavy China accounts for an increasing share of global emissions. As Breakthrough has written about for a long time now, we are still a long way from scalable food and energy systems that run without fossil fuels. But here, too, the most pragmatic solutions involve accelerating technological substitution of clean energy for dirty energy — the same general process of decoupling that has driven progress in other resources. Some or most of these trends may be moving too slowly for Hickel and other observers, and indeed, where acceleration is possible, that should be both the technological and policy goal. But aggregate human consumption of resources doesn’t tell us much of interest about either resource sustainability or environmental impacts. To get at those problems, we need to look at things resource by resource, pollutant by pollutant. And when we do that, we see some significant progress, along with some still-worrying trends. Above all, though, we know that as societies develop, food and energy production gets more resource-efficient, economic growth slows down, and fertility rates decline. All of these trends still imply large environmental impacts in the future. But while intentional economic degrowth or hard limits on resource use seem far-fetched, absolute decoupling of the things that matter — environmental impacts — is still a very real possibility.

#### They systematically underestimate market ingenuity – the same reason every other historically similar argument was wrong

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Threatening reports about our ability to create disasters and even exterminate ourselves are not a new idea. A standard example is the British national economist Thomas Malthus in the early 19th century, who predicted that population growth would come to a halt because of starvation. Malthus calculated that the available food in the world couldn’t feed more than one billion people. He extrapolated the development from a still picture of his own time and couldn’t fathom that food production would increase tremendously thanks to new knowledge and technology. Our present food production is sufficient for seven times as many. Malthus didn’t pay attention to the fact that we live in a continuously changing civilisation, and the same kind of miscalculations are still made today. There are people who have even achieved the status of media superstars by presenting various dystopias and catastrophe scenarios. As early as 1968, Professor Paul Erlichs at Stanford University published the bestseller The Population Bomb, where he predicted that an imminent population explosion would result in hundreds of millions of deaths by starvation in the 1970s and 80s. Basically, he made the same mistake as Malthus, i.e. he treated knowledge and technology as if they were static phenomena. The most widely read environment report in the world, State of the World, was a loud whistle-blower when it was first published in the early 1980s. The Swedish version, Tillståndet i världen, was published yearly from 1984 and some years into the 2000s by the Worldwatch Institute Norden; I still have some of the early issues left. This report contains many valuable observations and suggestions, but also several basic analytical mistakes. In other words, it acts as an eye-opener, but it suffers from being tainted by political ideology. Its main weakness is that it doesn’t take the intrinsic driving forces of progress into account. State of the World was translated into most major languages and is, as already mentioned, the world’s most widely read environmental report. It has affected us all, directly or indirectly, through school and media. Even if the Swedish version I refer to was written some years ago, it is still worthy of discussion, firstly because it maintains an appearance of scientific validity, and secondly because it has served as a trendsetter for the general ideology which has been adopted by many later books and reports on the subject at hand. It still lives on as an engraved pattern in our conception of the world. In the report we can, for instance, read the following: A world where human desires and needs are fulfilled without the destruction of natural systems demands an entirely new economic order, founded on the insight that a high consumption level, population growth, and poverty are the powers behind the devastation of the environment. The rich have to reduce their consumption of resources so that the poor can increase their standard of living. The global economy simply works against the attempts to reduce poverty and protect the environment. We stubbornly insist to regard economic growth as synonymous with development, even though it makes the poor even poorer. Even if we up to this point have mainly described the environment revolution in economic terms, it is, in its most fundamental meaning, a social revolution: to change our values. Massive threat scenarios are still presented, for instance in the British scientist Tim Jackson’s book Prosperity Without Growth from 2009, which is one of the most widely read and frequently quoted works in this area. Tim Jackson, who is an economist and professor in sustainable development, explains how we humans are indulging in a ruthless pursuit of new-fangled gadgets in a consumption society running at full speed towards its doom. He also claims that material things in themselves cannot help us to flourish; on the contrary, they may even restrain our welfare. In other words, we cannot build our hopes that the economy, technology or science can help us to escape from the trap of Anthropocene, which has brought us to the brink of an ecological disaster. There are hundreds on books on this theme, and they all agree that the general state of the world is pure misery; everything is getting worse, the resources are being depleted, and that man will soon have destroyed the entire planet. The apparent reason for this, of course, is due to the consumption culture and the present financial system—which exposes man as a greedy, ruthless and ultimately weak creature. This attitude may serve a purpose as an eye-opener. But it is not very credible, and it may even be counterproductive. Of course, we can see a lot of problems ahead of us; but to solve them, we need the correct diagnostics instead of dubious doomsday prophesies. Focus: The Problem Since the focus of attention is so profoundly fixated on the problems in the climate and environmental debate, the progress already made—and the opportunities at hand—are often overshadowed. The example below will help to illustrate this point: In the year 2014, the Nobel Prize in physics was awarded to three scientists who had invented blue light emitting diodes—a technology that has made high-bright and energy-efficient LED lighting possible. As lighting accounts for 20% of the world’s total electrical consumption, this invention has the potential to radically reduce energy consumption and greenhouse gas emissions. In an interview made by the major Swedish daily newspaper Dagens Nyheter, one of the prize winners, Hiroshi Amano, says the following about energy-efficient, inexpensive and high-bright LED lights: “They are now being used all over the world. Even children in the developing countries can use this lighting to read books and study in the evenings. This makes me very very happy”. Shortly after this announcement, the news headlines declared that LED lighting was a threat to the environment. This statement was based on a report showing that LED lighting could be hazardous to flies and moths, which in turn might disturb the eco system. This is a typical example of how progress pessimists and, not least the media, think and act. In this case, they focused on a potential problem associated with LED lighting, and ignored the tremendous possibilities that the new technology offered to dramatically reduce greenhouse gases and thus spare the eco system (not to mention all the other advantages). Books and reports of the kind mentioned above tell us repeatedly about disasters, threats, problems, collapses and famines. On the other hand, they are notoriously silent about the great improvements actually made—the reduction of extreme poverty (not only as a percentage but also in absolute numbers), longer lifespans, dramatic global progress in education and healthcare, etc. The lack of positive media coverage on the environment means that many people believe that too little is being done, which is quite understandable considering the one-sided nature of the information they are presented with. Alarmist reporting almost always reminds me of pirates: they are unreliable and half their vision is blocked by their eye patches. It is vital that the media not only one-sidedly focus on the misery without presenting the progress made and suggesting constructive courses of action. The quality of our decisions in all respects depends on our knowledge, insight and attitude. Real and Imagined Threats Many people are convinced that the climate and environmental problems are growing. It is certainly true that our planet has its limitations, but many of the predictions from alarmist literature have been proven false. In the 1980s, the forest dieback was a frequently discussed subject. To quote the well-known German news magazine Der Spiegel, an “ecological Hiroshima” was imminent. Most experts at the time claimed that a wide-spread forest death seemed unavoidable. Additionally, the general mood of impending doom was augmented by the threat of a nuclear disaster during the cold war. I remember the pessimistic discussions among friends and how frequently the gloomy reports appeared in Swedish and Finnish television. The future of humankind appeared to be depressingly bleak. But the forest dieback never happened. On the contrary, the forest area has been constantly expanding in Europe, even during the entire period when the forest was believed to be dying. Today, only two thirds of the yearly accretion in Europe are cut down, according to the Natural Resource Institute in Finland. There are different opinions as to why the large-scale forest dieback didn’t occur. One theory is that the researchers’ evidence and conclusions had been incomplete and too hasty; the forest was actually never in danger. Others suggest that the emission limitations implemented prevented the disaster. My point is that the environmental catastrophe did not happen. Some other environmental problems, exaggerated or not, that have concerned us during the last decades have also disappeared from the immediate agenda: overpopulation, DDT, the ozone hole, heavy metals, lead poisoning, soot particles, the waste mountain, and the acidification of our lakes. Unfortunately, some environmental problems, like soot particles and waste, still remain in some areas, especially in poorer countries, where there are other, even worse problems that have yet to be resolved. The conclusion is, however, that we and our society in most cases have handled threatening situations quite well. When alarming symptoms are noted, scientists and other experts are summoned, and we act according to their diagnoses. It is no big deal that the diagnoses are sometimes wrong, as long as the side effects are not too severe. The main thing is that we do our best to avoid disasters, and on the whole, humankind has succeeded rather well this far. As individuals, we react very differently to various kinds of threats. The closer and more tangible the threat is, the more violent are the reactions—while distant and invisible symptoms, like the depletion of the ozone layer, concern us less. In the latter cases, we have to trust the scientists’ and later the politicians’ reactions. Does this mean that disasters are avoided thanks to war headlines, threats, and anxiety? I don’t think that this is the most important explanation; rather, it is factual and science-based information that produces effective results. But if exaggerated threat scenarios and reports of misery are needed to inspire the necessary political opinion, acquire research funding and create behavioural changes, we will have to live with that. The most important thing to remember in this context is that the actions shouldn’t cause more harm than the original problem itself. The risk with exaggerated threat and misery reporting is that it may inspire an over-reaction based on misleading diagnoses, or the opposite—a paralysing feeling of helplessness. It is necessary to take threats against the climate and the environment seriously, but not to a degree where our ability to reason and act is blocked by fear or anxiety. Many environmental debaters claim that the fall of the Inca and Roman empires were caused by the same causes that are now threatening our present civilisation—a short-sighted over-exploitation and rape of nature. Easter Island is another popular example. However, in my opinion it is both worthless and irresponsible to judge the world situation of today by copying the outcome of earlier cultural endeavours in history. The inhabitants of the Inca empire and Easter Island didn’t have anything even remotely comparable with the organisations, technology, medicine or general knowledge of today. It would be like comparing a case of appendicitis in the past to a case today. In pre-modern times, it was a fatal condition. In this day and age, it is cured by a simple routine operation. Today, humankind is conscious of the climate changes and other ecological challenges. And we also have the knowledge and resources needed to act. Facts, Propaganda and Hidden Messages During all the years I have followed the development of technology and society, I have repeatedly observed how a mishmash of serious research, political propaganda, and the hidden agendas of individuals have been distributed more or less randomly by the media. There are of course many different kinds of alarmism— everything from well-founded research reports to exaggerated prophesies of doom. It is far from simple to separate the wheat from the chaff. The actions taken against ozone depletion, lead emissions and the toxic chemical, dioxin, are all examples of how research has shown the way to successful results. Today, greenhouse gas emissions top the list of issues deserving our gravest attention, as it is a global phenomenon—just as the depletion of the ozone layer once was. There are also a considerable number of local environmental problems, such as drought, air pollution, forest depletion and overfishing. All of these are real threats that have to be acted upon, even though they are not global. However, I am always disturbed when a single global environmental issue is bundled with an assortment of several local issues, rather like a simplified trademark advertisement for the negative consequences of civilisation. This makes the information abstract and inaccurate, ignoring the fact that different locales require different solutions. Fear and alarmism are natural reactions that once protected us when we were living at the mercy of nature—they are evolutionary relics from our life in the savanna. Today, the same properties can be significant drawbacks. The transition from a primitive, animal-like state to the society we have today must, on the whole, be counted as a great success. But many people regard the same world as over-exploited, depleted, unjust, war-ridden and balancing on the brink of destruction. How can people living in the same epoch have so entirely different views of the world? In the sustainability debate, there is one faction dealing with the natural resources and ecosystems, and another focusing on the redistribution of wealth. There is even a third faction discussing a minimalistic lifestyle; for example, downshifting, with less work and less material welfare. When all these ingredients are mixed without discretion, the result is an anxiety soup that many have choked on. In a situation like that, we cannot expect any constructive initiatives to materialise. Instead, it would be far better to explore, research and discuss each dimension separately. What Is the Real State of the Planet? It is easy to generalise and say that we over-exploit the planet’s resources and pollute the world with our waste. But how many care to examine these statements in detail and ask exactly which resources are over-exploited? • Are fish becoming extinct? It is true that overfishing occurs in many places, which is, of course, unsustainable. However, this is not an unavoidable threat to the world’s total food resources. Fortunately, there are several examples of fish stocks that have either recovered or started to replenish once the fishing effort has been eased. • Is the air being poisoned? Many are convinced that the air we breathe is becoming dirtier all the time. But that isn’t true, at least not in the Western world. From the year 1990, emissions of sulphur dioxide have been reduced by 80%, nitrogen oxides by 44%, volatile organic substances by 55%, and carbon monoxide by 62%. Despite these dramatic improvements, 64% of Europeans believe that pollution is increasing. • Are the forests dying? It is a general belief that the forests in the developed countries are dwindling. But that isn’t true; on the contrary, the wooded areas are expanding. However, the forests are decreasing in the poor countries, where forestry and farming are still major sources of income, as they once were in the industrialised countries. • Are we drowning in waste? There are many who believe that we are surrounded by constantly growing mountains of waste. In the developed countries, the truth is that increasing amounts of waste are being recycled and the landfills are decreasing. • Will there be enough phosphorus? Phosphorus is an important nutrient in farming, extracted from phosphate ore. Many scientists fear that the finite natural resource of phosphate ore will become depleted in the future, which may jeopardise the world’s food supply. But there are already working solutions for this problem, such as by reclaiming phosphorus through digestion residues and sewage sludge. There are also technological solutions for the chemical extraction of phosphorus from polluted water—the remediation of lakes and rainwater by removing phosphorus is already a common procedure. Here we achieve a win-win situation—phosphorus is collected while preventing the eutrophication of lakes. • Will there be enough energy to go around? A common statement is that the earth’s population is too large, and that we consume too much energy with respect to the climate. This is one of those issues where we have to think in terms of symptoms, diagnoses, and medication. The symptoms are there for all to see: climate change. On the other hand, the diagnosis that we consume too much energy is wrong. The correct diagnosis is that we are not using the right technology; i.e. energy efficient power production without harmful emissions. Consequently, the correct statement would be that we consume energy that is produced by technologies that are harmful to the climate. The difference in wording is important. As the first diagnosis is “too high energy consumption”, the remedy will be to use a different medication than a diagnosis based on “the wrong technology”. Alarmist reporting can inspire bad decisions if the statements aren’t systematically reviewed and evaluated. It can also be misguiding to express environmental threats in general terms. Actions must be based on precise specific symptoms with corresponding diagnoses. If the doctor discovers that the patient is lame and suffers from a high fever, it doesn’t help to predict imminent death. Maybe the lameness and the fever have different causes altogether! A successful cure would probably include two different diagnoses with separate medications. Several recent surveys of the general conception of the world have been made— one is Project Ignorance by Gapminder and Novus in Sweden. One of the questions asked was whether CO2 emissions per capita and year had increased or decreased in the world during the last 40 years. The surveyed group was large and representative in order to give a fairly accurate picture of the common opinion. No less than 90% believed that CO2 emissions had increased. The truth is that they haven’t increased at all. It is important that decision makers on all levels learn how to see the wood from the trees. Decisions based on false preconditions can halt technological development, and thus also the development of the economy, welfare, and a healthier environment. The flow of innovations in the climate and environmental areas is accelerating rapidly. This can be seen in the number of improvements that have occurred in recent years, which can be counted in the thousands. Such improvements have to be weighted on the same scale as the problems in this area. That is not to say the problems should be ignored—they need to be acted upon. But they should not be allowed to occupy our brains to the extent that our power to act is paralysed. Is the Notion of Sustainable Technology-Driven Growth Over-Optimistic? The development of a technological society has always been questioned. In the 19th century, critics claimed that the technological revolution would create poverty. In the 1970s, it was generally believed that the forest dieback would cause a disaster. In the 1980s, the acidification of lakes and throwaway mentality of society were regarded as manifestations of the devastating properties of growth and industrialisation. Today, many fear the environmental effects of air travel and the production of electronic devices. There are people who seriously wish to halt economic growth and wind back the clock to the society of the 1960s. They recall this time period as small-scaled and down-to-earth, stress-free and idyllic. But they tend to forget that the refrigerators of that time required 90% more electricity than today, and that our teeth were repaired with mercury fillings instead of plastic. There were no X-ray CT scanners and no medicines against ulcers. In addition, there were many more people living without electricity. There was also more widespread malnutrition, a higher infant mortality, and, in fact, more wars. Cars were fuelled by leaded petrol, and sulphur emissions were 90% higher than today. The acidification of lakes, as well as polluted streams and fields, were serious concerns. Since then, technological innovations have reduced sulphur emissions and removed the lead from car fuel. At any given point in history, there have been critics claiming that this was the time when we had reached the optimal point in the development of the modern society. But we hadn’t, not then and not now. And the more our countries are modernised, the greater our possibilities to care for animals and nature become. In the mid-1800s, the killing of large animals like sperm whales didn’t concern people to any significant degree, despite the cruel hunting methods using harpoons. The benefits of the whale fat, mainly used for lamp oil to facilitate reading in the evenings, overshadowed any empathic impulses. In the 1850s more than 70,000 people were employed by the American whaling industry. There were 900 ships in the world hunting whales, and during one of the most active years, 8000 whales were butchered, which provided more than 300,000 barrels of oil. The oil extracted from the head of the sperm whale, the so-called spermaceti oil, was especially sought-after. It was of very high quality and sold for 1.50 US dollars per litre in today’s monetary value. As a consequence, the number of sperm whales in the world rapidly dwindled. However, when oil drilling started in Pennsylvania in the year 1859, the price of whale oil began to fall. The fast transition to petroleum products for lighting and other applications is considered to have saved the last of the sperm whales. Thus, new technology can both contribute to the protection of threatened animal species and provide the wealth to make it affordable for us to even save predators. Imagine what would happen if we were able to bring back someone from the 19th century and tell them that today we move wolves though the air by helicopter in order to save the species and expand its habitat; our ancestor would probably rather go back to sleep than listen to such apparent stupidity. Pessimism Does not Support a Sustainable Development There is a lot of progress going on in the world today, but not without negative side effects. When improving the world and dealing with the side effects, an optimistic attitude provides us with a much better chance of success than a pessimistic view. The optimist carries a positive inner beacon to follow, while the pessimist is always looking for potential traps and drawbacks. As visions and conceptions of ideas often become self-fulfilling, it isn’t difficult to realise what’s most constructive. All decisions—big or small, conscious or not—are affected and guided by our inner beacon. When solving a problem, such as developing a new product for example, it is necessary to have a conception of a working solution in mind. As a product developer, it is of course necessary to review every minute step in the process and question the choices made. You have to ask yourself if there may be a better material or a smarter design. Strange as it seems, this continuous struggle in the mind of the developer may appear to be a kind of pessimism, as it is all about looking for weaknesses in the imagined solution. It is not dissimilar from the process a doctor follows when selecting a diagnosis and a remedy. You start with certain hypotheses, examine, exclude, test, question and verify until you are satisfied that you have made the correct diagnosis. Then the choice of medication becomes much simpler. It would be fatal if the doctor was pessimistic from the start and worked in the belief that it would be impossible to find a reason for the illness, or a working remedy. This could then be the conclusion that such a doctor would unconsciously try to verify. Would you like to have a doctor like that? The same is true for climate and environmental problems—we need optimists armed with critical thinking to solve them. There are also so-called climate change deniers, who believe that man hasn’t really affected the planet and its ecosystems to any significant degree. Some of them claim that the influence of the sun and other natural phenomena are so enormous that human activities have no bearing on global warming. Perhaps these deniers are so deeply pessimistic that they cannot imagine any possible solutions. For ages, man has harboured a certain distrust of his own species. Throughout history, various religions have emphasised human shortcomings and presented assorted consequential threats. During the last 30 years, such prophesies have increasingly often been introduced by environmental activists and some political groups, whose messages have been significantly supported by the media. The underlying conception of humanity isn’t flattering. The human race is considered to be fundamentally ruthless, greedy, short-sighted and evil. Threats against the climate and much other misery on earth are caused by human failure. However, if we take the time to study the progress that has been made by the human race throughout the ages, we actually get the opposite picture. Can it really be evil, greedy, and short-sighted beings who put their own lives at stake to treat people infected by Ebola or HIV in poor countries? Who are the ones that are continuously reducing the number of starving people on earth? Who are the ones that invent vaccines for the children of the world? Who are the ones that have developed a civilisation where an increasing number of people get educated, and who struggle to reduce the casualties of war? Why blame an entire species for atrocities that are actually committed by a mere fraction? Establishing a firm belief in humankind should be the first step on the road to sustainable development.

#### Yes absolute decoupling – prefer consilience of data and experts – their indictments don’t assume urbanization and peak car

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Abstract The decoupling of fossil fuels from economic growth has not been imaginable for most of the industrial era but is now underway. The data for this are presented for the world and for typical nations. The mechanisms behind this are outlined and suggest that climate change goals to end poverty and to achieve the phasing out of fossil fuels are achievable if the trends are mainstreamed. Keywords Cities, Decoupling, Decarbonisation, Disruption, Forecasting 1. Introduction In 2015/16 the world’s governments committed to two core sets of goals for the future: the Sustainable Development Goals (SDG’s) and the Paris Agreement on Climate Change action which essentially aims to phase out fossil fuels by 2100 and 80% by 2050. Inherent in the achievement of the SDG’s is the need for economic growth, especially in the dominant SDG1 “End poverty in all its forms everywhere”. Yet in the past this has led to increases in fossil fuels and hence greenhouse emissions. Are the SDG’s therefore inherently in conflict with the need for climate change action? Or can the world achieve decoupling of economic growth from fossil fuels and greenhouse gases? For some these two sets of goals are incompatible as GDP and fossil fuels, hence greenhouse gases or GHG, have been totally coupled for over a hundred years so climate change action can only be achieved by degrowth [1]. For others, especially the UNEP and IPCC, who are more positive about sustainable development achieving economic and environmental goals together, the agenda of decoupling GHG and GDP is critical [2] [3]. 2. Methods The data for wealth and economic growth are from the World Bank [4] and GHG are from the International Energy Agency [5]. GDP and GNI are very sim ilar measurements of economic growth and GNI was chosen due to greater availability. They are standardized to a date back in the 1990’s where it is possible to show how growth rates begin to separate out and indicate the level of decoupling. 3. Evidence In 2016 the International Energy Agency announced that the world had changed. For the first time in hundreds of years the world was producing less greenhouse emissions than the year before without this being caused by an economic crisis [5]. In 2015 the amount of GHG emitted to the world’s atmosphere decreased by around 0.5% whilst economic growth continued at more than 3%. A few scientists had predicted this but mostly the fossil fuel lobby had been in complete denial over its possibility [6]. Figure 1 shows that for the first time the industrial world was producing wealth without this meaning more fossil fuels and more emissions. Despite its huge implications for a world that has faced down the global climate issue for decades without much good news, the world’s media were virtually silent. Perhaps this was because the EIA (from the US Government Energy Information Administration) were more sanguine predicting a continued growth in GHG of 1%, though their data were only up to 2012 and in reality, they did not consider the possibility of major changes often picked up by groups such as Carbon Tracker [7] [8]. Indeed, Carbon Tracker has shown that the new trends in GHG are following the kind of projections made by the IPCC’s carbon emissions targets much more closely than any other conservative projections. The decoupling of greenhouse gas emissions (GHG) from wealth (usually measured as GDP or GNI, gross national income) has been a UN agenda for several decades [2] [3]. The first signs of decoupling began in the 1990’s as Figure 1 indicates and their trajectories have been separating out quite rapidly for most of the 21st century. For many commentators and scientists, such as the IPCC, this relative decoupling was not significant enough for a world needing less total GHG until the actual decline in global emissions began. Now we appear to have reached a point where this can be seen in a peak in global greenhouse emissions. We now have absolute decoupling for the first time. 3.1. Understanding the Causes The simplest explanation for decoupling is to see the mathematical relationship between GHG and GDP as: GHG GDP GHG Energy Energy GDP = × GHG/Energy is called the carbon intensity and Energy/GDP is called the energy intensity. GHG/GDP will lower as the national carbon intensity decreases from greater use of renewables and natural gas; energy intensity will decrease as energy efficiency increases. Thus the increased use of renewables and the increased energy efficiency result in a relative decoupling of GHG from wealth. This relative decoupling was set as the basis for many national goals rather than seeking actual absolute reductions in GHG, especially if the countries were growing fast economically (like China and India) and were expected to have low but rapidly expanding GHG. This was seen by coal companies as the reason why coal consumption would continue to rise [9] [10]. This paper will show some of the rationale for why this is happening faster than expected but in particular that it is being driven by the world’s cities. Because cities are rapidly growing we can expect decoupling will continue to rapidly phase out the world’s dependence on fossil fuels and continue its goals in ending poverty. Figure 1 shows that Gross National Income (a way of measuring global wealth) has decoupled from greenhouse gas emissions. The notion of decoupling is based on the same idea as the economic theory of Environmental Kuznets Curves (EKC) which shows that as wealth grows people begin to choose environmental quality increasingly once their basic needs have been met. Decoupling is however happening earlier than expected in many parts of the world and indicates that there is more to this process than just simply getting wealthier. Perhaps one very key finding by a 2012 ADB report [11] is that the EKC was related to how quickly urbanization is happening as it is in cities that the phenomenon is most easily observed. In Figure 2 we have begun to breakdown the GHG into its main components by looking at consumption of coal and oil which are the largest causes of GHG. The spurt in global coal growth in recent times was mostly due to China but as can be seen in Figure 3 that era is over and China declined in its coal consumption in 2015 for the first time. Oil has also begun to plateau in China. The driving forces behind this will be outlined later but it is important to see that the growth in China’s economy is no longer dependent on growth in fossil fuels; they are phasing out and yet China is becoming wealthier. Indeed it is important to see that the reduction in GHG has occurred after an extraordinary 15 years of economic growth that took China out of its extreme poverty. The global Millenium Goals that were agreed to by the world’s nations in 2000 for the period up to 2015 focused on how development could halve extreme poverty—defined as being less than $1.25 per day. Across the developing world people living in extreme poverty declined from 47% to 22% between 1990 and 2010—achieving the Millenium Goal 5 years ahead of time [12]. This was mostly due to rapid declines in extreme poverty in China and India with some improvement in Africa. This process has taken around 1 billion people out of extreme poverty in a 15 year period. It is also important to see that the rapid decline in poverty has mostly occurred within cities and that the extremely rapid urbanization in China (and now in India and Africa) is what fuels this dramatic change. It also clear that there was not as much concern in this rapid urbanization in the emerging world’s cities for achieving fossil fuel and GHG reductions; these cities were and are focusing on ending poverty. But the new trend in China which decoupling is now underway provides great hope that the process will now spread to the whole emerging world. China is probably going to show the way to decouple rapidly as they invested $90 billion in renewables in 2015 (more than 60% of their investment in energy) so much of their continuing growth will be based around solar and wind rather than the fossil fuel-based economic growth of the past 15 years. The data on developed nations below show that decoupling can be anticipated in all elements of economic growth as GHG decoupling has set in. The big question for the world is whether this process of absolute decoupling is likely to continue in places like China and India and Africa as they develop. In Figures 3-6 we have presented the data on decoupling for Australia, China, Denmark and the United States to show that the extent of absolute decoupling is now considerable and this indicates that the global decoupling process is likely to continue. The largest decoupling is in Denmark, where the absolute decoupling began back in 1994 and has continued since, with coal and oil in significant decline without impacting on their overall growth in wealth. The US and Australia are following this pattern though not as spectacularly as Denmark. Most European nations have similar trajectories to Denmark. The EIA data in Figure 7 on China and the US, which stops in 2012 and so is not as clear in recent times about absolute decoupling, is certainly showing the sources of the decoupling. The reduction in the ratio of GHG over GDP in cludes both energy efficiency and growth in renewables leading to a decoupling of GHG and GDP of around 60% over 22 years in China and nearly 50% in the US. Similar data is available on India, the fourth largest emitter of GHG, and they have made very significant commitments to solar and to electric rail as well as energy efficiency that could lead to their absolute decoupling well before EKC theory would have predicted [13]. Although many would not want to say that the battle is over, there is no doubt that the era of fossil fuel dependence is ending. It obviously needs to keep going and gain exponential decline momentum. Our book is written to help with that momentum through the powerful forces of change that are potentially available in our cities. 3.2. Causes of Decoupling The three primary sources of change are government, business and the community [14]. Each of these play a part in any change and will be briefly outlined here before showing how the power of cities to bring these together is what is really driving the world to decouple from fossil fuels. 3.2.1. Government The Paris agreement in December 2015 (COP21) was an historic accord signed by 196 nations. It was significantly easier for the nations of the world to sign than in Copenhagen in 2009 (COP15) as the world could now see that the changes being required on them were already underway without causing a decline in wealth generation, as outlined above in Figure 1 and in national data. Nevertheless it was a significant achievement and a lot of lobbying and government activity was required to demonstrate that it was now possible to commit more heavily to the journey of removing fossil fuel-based economies 100% by 2100. The follow-up commitments began in New York in April 2016 with a signing by 175 nations to ensure that climate change is “well below” the 2 degrees’ limit accepted by the world’s scientists. Each country must now deliver the ratification from their parliaments and begin the adoption of annual goals that are meant to be ratcheted up whenever the country feels able to do so. The role of government in providing regulations and infrastructure to enable higher energy efficiency and low carbon electricity, fuels, appliances, buildings and vehicles has been a driver of change over the past 30 years. This process is usually one of being a small step ahead and pushing the system to produce a better low carbon outcome without too much cost or change. However it is possible, that disruptive innovations will begin to take over markets much quicker than governments have allowed for. In our view the emergence of solar and battery storage is likely to rapidly displace coal and the reduction of car dependence and electrification of transport is likely to rapidly displace oil. This process will depend on whether business and the community can see the changes emerging and accept that new fossil fuel-free goals are achievable in their cities and towns and how they can use the opportunity to ride this new economic wave rather than try to prevent the change. 3.2.2. Business There is a lot of evidence that the next area of growth for business is the green economy and that there are large groups of businesses partially or totally funding green innovation, products and services as the basis of their future [15]. The most significant driver in the 21st century leading to the removal of coal (and gas) for electricity production has been investment in renewables. As shown in Figure 8 below there was a point around 2004 when investment in renewables by the world’s bankers and financiers outstripped fossil fuel-based power investment. In the most recent data from Bloomberg New Energy Finance the investment ratio is now 2:1 in favour of renewables. Business has often been seen to have very short term goals of a year or so in terms of their strategic plans for market gains. But investors from the financial community look to see how they will make profits right through the lending period which is usually 20 years. When governments are debating the world’s scientists about how quickly they can remove fossil fuels from the market place, then it is easy to see why they would not want to invest in potential stranded assets like coal-fired power stations when other options that governments and scientists want to see, are available. In the US in the past 5 to 8 years the phasing out of coal was made easier by the availability of natural gas. At the same time dramatic growth in solar and wind power was underway and now it is possible to see how the natural gas limits are being reached as renewables becomes the fuel of choice [17]. The combination of these two forces led to the collapse of coal consumption in the US and decline and fall of the largest coal company Peabody with many stranded assets. In Australia a similar process has been underway with gas as the preferred option over coal but in the past 5 years the dramatic growth in rooftop solar has created a significant market that was not considered likely for decades. 1.5 million homes purchased roof top solar in 5 years without any real subsidies like feed-in tariffs and in Perth this reached 25% of households. The 550 MW produced is the largest power station in Western Australia and has led to the Minis ter Energy saying growth will inevitably reach 70% of households by 2020 and the utilities will never again need to purchase a coal or gas-fired power station [18]. The implications for the cities and towns in Western Australia for how they manage a potentially carbon-free power future in the next decade are a journey they were not prepared for. Fossil fuel-based power stations are now likely to be stranded assets and the key questions are about how battery storage can make this transition seamless for business and households and how it can enable the electricity grid to be maintained as a way of equitably distributing solar electricity. This is likely to be different in different parts of the city as well as in different types of settlements in rural and remote locations, as will be discussed later. 3.2.3. Community The reasons why Perth grew so rapidly in adoption of solar include factors like easy access to Chinese mass produced PV cells (and now batteries) and the high price of electricity, but mostly it was driven by the community. In the 8 years from 2008 there was a significant economic boom in Western Australia when the rest of the world was frantically adapting to the GFC. For a period Perth became the wealthiest city in the world and the new money was flooding into many household bank accounts. Many chose to put it into a rooftop solar system because of their interest in long term sustainability (over 80% of the community want to see action on climate change) as well as having an investment that would pay for itself in 5 years. Community values can easily be underestimated when facing the future and the need to address complex matters like climate change. The majority of this rooftop solar has gone into the outer suburbs which in Australia are generally less wealthy though they often have bigger homes with bigger roofs and bigger power bills [19]. The inner suburbs are much higher socio-economically and have higher green intentions but in reality it was the outer suburbs who have made the majority of the investment in solar. It indicates that the mechanisms for decoupling economic growth and fossil fuels will vary between cities and within cities [20]. 3.3. What about Oil? The reduction in consumption of oil is another example of how cities have begun to drive the change to remove fossil fuels at a faster rate than many anticipated. It also is a combination of government, business and the community. The collapse in oil price as well as the collapse in coal price appears to be due to demand issues as well as supply issues. Demand for coal will continue to drop as renewables takes over; especially as battery storage becomes cheap. Demand for oil is expected to decline as vehicle fleets are electrified; however it has already gone down despite there being only a few percent of electric vehicles. The reason why this has happened appears to be a city issue: for the past 150 years cities have been moving out as they have followed first trains and trams then automobiles, but now they are coming back in [21]. Our work on cities has shown that there is an exponential relationship between urban density and car use/fuel use as in Figure 9. If cities have begun to increase in density rather than decrease then they will drop down the steep curve quite quickly creating exponential decline in car use. This is what we are now seeing in all the world’s developed cities and the phenomenon is being called ‘peak car’ as car use per capita has peaked and is in decline. Indeed it is very similar to the decoupling phenomenon described above. Many cities are now seeing that their economic growth is dependent on them reducing their car use. Hence cities like Washington DC and Portland, Oregon have demonstrated that their wealth is decoupling from car use (Figure 10). It should be no surprise that this strong decoupling is associated with cities that have invested in good urban rail systems in recent decades. The decoupling is closely associated with this as our data also shows that urban traffic is slowing in all the world’s cities and urban rail is now able to outcompete cars as they can go around, over or under the traffic [21]. Governments play a big part in generating this transition as they are needed to help plan, though not necessarily finance, such large scale infrastructure. However business and community are also critical as they are responding to a new economic process associated with the knowledge economy. Many businesses that are part of the new innovation economy are locating in city centres where they can have creative face-to-face contact with people from various backgrounds and professions [22] [23]. These new jobs are generally for the young Millenials and also older wealthier professionals. As a result they are the backbone of the social movement that has rediscovered inner and central city living. The market demand for dense urbanism that is not car dependent has therefore grown dramatically in the 21st century city. In more recent work the same phenomenon of peak car has been found in Shanghai and Beijing which are now carrying 8 and 9 million passengers a day on their new Metro systems enabling a significant reduction in the relative use of cars [24]. The rapid change into decoupling growth in wealth from growth in car use is happening in emerging cities because they have the urban fabric that is not suited to large scale growth in car use. The building of 81 electric urban rail systems in Chinese cities and 52 in Indian cities is indicative of how the switch away from oil is happening before many expected. 3.4. The Future A range of fossil fuel demand forecasts and the forecast just for renewables are set out in Figure 11. The nine organizations they used include the main fossil fuel companies and the main government-based forecasting bodies of the IEA and the EIA. The average growth from 2015 to 2050 is 580 EJ to 850 EJ with the oil companies suggesting well above these forecasts. The average for renewables goes from 80 EJ to 200 EJ with the fossil fuel companies suggesting much less than this. What this suggests is that based on historical trends global energy demand is forecast simply to grow in line with global population growth and growth in GDP. Owing to this, fossil fuel companies predict that due to the continued forecasted rise of energy consumption, their products will meet the majority of this demand with a small though growing proportion of renewables. This is business as usual. However, this paper has shown that decoupling of fossil fuel energy from GDP has become firmly established and is being driven by cities from across the world. What if the trends are setting in to be significantly faster than most of these forecasts dare to suggest? What could happen if we took seriously the kind of disruptive innovations in our cities that are likely to lead to rapid decline in fossil fuels and rapid growth in renewables? In order to separate out the components of GHG growth we have used the Kaye simplification (based on the old Paul Ehrlich simplification of Impact being a combination population, resource consumption per capita and technology efficiency per unit of resource consumption): GHG = carbon intensity per unit of energy (GHG/Energy) x energy intensity per unit of wealth (Energy/GDP) x wealth per capita (GDP/population) x population The carbon intensity of energy is going down globally and will increase rapidly as renewables increases its proportion. The decoupling of energy from wealth has been increasing with a 35% decoupling between 1990 and 2015 and from the above diagrams this will grow even more rapidly as the two separate out. Wealth per capita is likely to continue its gradual growth and population growth is predicted to continue but slow. The interactions between all these factors are complex for example urban population growth will help propel the economic processes that enable solar adoption and urban regeneration as well as being a factor in creating more GHG until these processes enable the phase out. The scenario considered most feasible will be something like the IPCC goal of 80% less GHG by 2050 as in Figure 12. 4. Conclusion The end of fossil fuel dependence is hard to imagine but it is getting easier because the trends show it is underway. This paper has shown the kind of exponential growth in renewables and decline in fossil fuels that we have just started to see could in fact decouple economic growth from fossil fuels much more rapidly than most have forecasted. The continuation of these trends will require a combination of different forms of solar-based power, different forms of electric transport and different forms of urban fabric. Most of this will be in cities. Government, business and the community will drive it in different ways in different

### Sustainability---AT: Automation

#### Automation and informationalization are sustainable

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Lump-of-Labor Fallacy Many are concerned with the idea that automation will displace workers—and they are partially right, though the story is not so simple. There have been, and will continue to be, innovations that replace workers throughout the economy. But those workers are only permanently displaced if we think there is a fixed amount of work to be done in the economy. This idea, which gives rise to the notion that an increase in the amount each worker can produce actually reduces the total number of jobs an economy can support, is known as the “lump-of-labor fallacy.” Think about the personal secretary. The advent of the computer, combined with advances in software, have lead to the decline of this profession. This undoubtedly displaced hundreds of thousands of workers (Jacobs 2015). Do these workers permanently leave the labor market? Are those jobs gone forever, never to be replaced by other jobs? If we think there is only a fixed amount of work to be done in the economy, we would rightly want to bash these machines. After all, they will take all the work! But that is not how the real economy functions. First, our economy is a dynamic one. Every month, new jobs are created as other jobs are destroyed. When we read the headline numbers from the U.S. Bureau of Labor and Statistics (BLS) on job creation every month, what we are seeing is the difference between jobs created and jobs destroyed. Luckily, the government tracks these numbers in the BLS Job Openings and Labor Turnover Survey (JOLTS). In 2017, the economy destroyed 62.6 million jobs—but it also created 64.7 million, meaning that the economy added 2.2 million net jobs (BLS 2018b). The economy will continue to destroy specific jobs, but that is not necessarily a bad thing for the overall economy.19 On average, the economy destroys low-productivity jobs and replaces them with higher-productivity jobs—opening the door for higher wages and rising living standards. Second, we do not know what the jobs of the future are. A generation ago, people would not have predicted that information technology (IT) jobs would be where they are today. It is clear from the media reports that the fear of destroying jobs sells. What is missed by this half-truth is the fact that technological developments also generate new jobs. As the recent Deloitte report argues, technology creates far more jobs than it destroys (Stewart et al. 2018). Third, the fallacy misdirects public policies. Arguments are frequently made that we need to bring back our old jobs or rejuvenate declining industries like coal. Given the destruction of communities in the wake of increased trade and an economy transitioning away from coal and general manufacturing, such arguments are understandable. But policies directed to look backward instead of forward are misguided. While this does little to combat the economic despair caused by losing these jobs, the answer is in building public policies for the future. The fatalism perpetuated by the lump-of-labor fallacy, inciting fear that the economy cannot create new and better jobs, leads to a decline in public pressure on policymakers to help create an economy with full employment and rising wages. Policymakers must recognize and adapt to the fact that the economy is dynamic, but also that getting the policies right is essential to the creation of new and better jobs. After all, the level of unemployment and wages in our modern economy is largely dictated by policy choices. In sum, as long as there are unmet needs in society, there will be work to be done. SECTION TWO Automation, Unemployment, and the Future of Work “The basic fact is that technology eliminates jobs, not work.” -Report on the National Commission on Technology, Automation, and Economic Progress, 1966 Let us be clear: Technology destroys jobs. But it creates more new jobs than it destroys. The idea that developments in technology will replace a large segment of the workforce, adding them to the rolls of the “surplus population” is not a new one. In 1964, President Lyndon B. Johnson signed a bill to create the National Commission on Technology, Automation, and Economic Progress (Bowen 1966). The commission was to concern itself with the recent (early 1960s) rise of hysteria around robots taking all the jobs, rendering the human worker obsolete and unable to put bread on the table. Sound familiar? Specifically, the commission was to analyze the pace of technological change, the economic and employment needs of those potentially affected by automation, and the means by which technologies can be utilized to “yield general benefits” to society by meeting “unmet human and community needs.” While the report rejected the argument that technology would result in permanent increases in unemployment, it recognized that the process of technological change was costly, and that technology was “a major factor in the displacement and temporary unemployment of particular workers.” Today, during a time of growing inequality, job precariousness, and a broken link between productivity growth and rising real wages for workers, people are right to be concerned. In assessing the relationship between technological change and employment, we have a number of factors to consider. First, we must separate the destruction of jobs and the destruction of work. To do so, we make a distinction between the general level of unemployment and the displacement of particular workers in certain occupations or industries that may result from technological change. While there is substantial evidence that technology has destroyed, and will continue to destroy, specific jobs, there is no evidence that technological change will in any way result in the end of work. After all, as long as there remain socially desirable needs to be met, there will be work to be done. The Destruction of Jobs In terms of the destruction of particular jobs, there is significant cause for concern given the weak protections for workers in the current labor market in the United States. Technological unemployment is the unemployment that results in workers who are forced out of a job due to technological change. As technological change progresses, there will inevitably be some technologies that displace workers, resulting in at least short-term technological unemployment. We can think of plenty of examples where technology has led to large scale substitution for labor. The U.S. was founded as an agrarian society, with the vast majority of the labor force (over 80 percent) engaged in agriculture. As technology progressed, and the economy diversified, labor exited the agricultural sector— entering the industrial sector at rapid rates. This marked an era of structural transformation in the U.S. By 1900, the percentage of workers employed in agriculture was cut in half, to 40.2 percent (Lebergott 1966). Due to the rapid innovation in, and adoption of, technology in agriculture, the sector has been fundamentally transformed. Developments from the reaper and thresher, to the tractor, to modern irrigation, to herbicides and pesticides have allowed for massive increases in agricultural production while significantly reducing the amount of hands necessary to grow, harvest, and process those agricultural goods. Today, agricultural employment accounts for a mere 1.4 percent of U.S. employment (USDA 2017). However, as the economy transitioned from an agrarian economy to an industrial economy, there were very real transitional costs to workers, including the systematic displacement of family farmers and the widespread abuse of early factory labor (Ritchie and Ristau 1986). Even in instances with strong unions, technological change can result in devastating consequences for workers. One of the most profound examples in modern history is the case of the shipping container. In The Box, Marc Levinson elaborates on the devastation to labor. Prior to the adoption of the modern shipping container, “[l]oading loose cargo on a medium-size cargo ship cost about $5.85 per ton in 1956” (2016). This labor accounted for nearly half of the total cost of shipping goods at the time. But with the introduction of the shipping container, experts estimated that loading and unloading ships outfitted to carry containers would cost only $0.16 cents per ton (p. 68). The automation of the ports was going to be devastating to labor, and in turn was fought by the unions. For instance, only three years after striking an agreement known as the Mechanization and Modernization Agreement, West Coast ports used 2.5 million fewer man-hours of labor, representing 8 percent of total labor in the first year of the agreement. In terms of the jobs decline, the numbers are staggering (ibid). In 1950, West Coast ports employed roughly 100,000 longshoremen. As of 2002, that number was down to 10,500 longshoremen, despite handling much more cargo than before (Greenhouse 2002). In terms of the current concern, sometimes workers are literally being replaced by robots (Acemoglu and Restrepo 2017), but more likely it is workers being replaced by changes in the labor process and other forms of technological advances that are incorporated into the production process. In a wellfunctioning labor market, with significant job churn and full employment, there may be little cause for concern. Workers who are displaced from their job once the robots are introduced could simply walk to the business next door and obtain a new job, frequently at higher pay. Or, the worker may be re-trained and will now help operate the new machinery, again at higher pay. Such instances frequently involve government support for transition policies—policies which are currently weak or nonexistent in the U.S. This is one set of potential outcomes from automation, one we can think of as the high road, but without the right institutional setting we may end up on another path—the low road. Despite a relatively low level of unemployment in the current economy, the economy is by no means at full employment. By full employment, we mean that everyone who seeks a job can find one.20 Provided that the economy is not at, nor has it usually operated near, full employment, policymakers should think deeply about the ramifications of technological unemployment and policy solutions to address them. Given the economic and political institutions that govern our current labor market, policymakers and workers should be concerned about technological unemployment. While the economy is not currently undergoing a rapid technological change, new technologies nevertheless will continue to destroy existing jobs—and even entire occupations. Technological unemployment is not a permanent phenomenon, but rather it is a negative byproduct of labor displacing technology and arises as a transitional phenomenon. Getting the transitions right is a matter of great importance. Job displacement resulting from technological change can be costly, resulting in financial distress, long-term unemployment, downgrading of employment, community distress, and other social ills. Throughout history we have witnessed workers, who have repeatedly been threatened by technological change, resist. Most famously, there was the Luddite movement in 18th and 19th century England. This was a movement of textile workers who opposed the mechanization of their labor process—not for fear of mechanization itself, but for fear that it would result in large-scale labor displacement and redistribution upwards because of the existing property laws (Hobsbawm 1952). Of course, if gains from automation are not shared, resistance from workers is completely rational. Whether or not we believe the headline numbers claiming a large segment of the U.S. workforce will be displaced by automation—and we shouldn’t—additional attention should be paid to think about labor market transitions and how public policies can support a well-functioning dynamic labor market while sustaining both full employment and broad-based wage increases reflecting an equitable distribution from technological change. The Destruction of Work The end of work is an entirely different matter. Economists have long disagreed about the future of work. For one, famed economist and Nobel Prize winner Wassily Leontief was convinced human labor, like horse labor after the widespread adoption of the automobile, would become obsolete (Leonteif 1983). While human labor has by no means become obsolete, Leonteif was not alone in this prediction. In 1930, economist John Maynard Keynes famously predicted that economic growth through technological change (i.e., productivity gains) would result in “three hour shifts or a fifteen hour work week” (Keynes 2010). He may have slightly underestimated our insatiability as consumers and capital’s ability to keep the masses working. A brief look at the data suggests that the economy has continued to produce large numbers of jobs. Figure 6 shows total nonfarm payrolls from 1939 through 2017. During that 68-year span, the economy managed to produce a net increase of 118,854,00 jobs. That is, the economy sustained about five times more jobs in 2017 than it did in 1939. History is a guide, so there is no reason to expect the economy to stop producing jobs; rather we should expect a change in the type of jobs created in the future. It is important to point out that times of rapid automation should actually lead to a short-term employment boom, not bust. Despite the fact that we are not approaching a technological revolution, we should have consensus on the fact that we cannot have layoffs ahead of productivity gains (Mason 2013). If firms are working to adopt new technologies, they need old workers in place to maintain existing levels of output, plus additional new workers in place to implement the new technologies. The uptake of new technologies takes time, and thus should result in a short-term gain in employment rather than immediate layoffs. If the robots happen to ever actually arrive, that is one thing, but the robots cannot be responsible for current levels of economic inequality or job displacement. As a final note, we must acknowledge that not all technological change is the same. The majority of the popular narrative on automation provides an oversimplified vision of technology as exclusively replacing labor. Some forms of technology complement labor, while other forms of technology are meant to substitute for—i.e., replace—labor.21 Thus, it is not clear by any means that technology in and of itself will be detrimental to workers. Automation need not destroy jobs; it can improve existing jobs and create new jobs. For instance, we can think of examples where improvements in technology have helped labor, enhancing workers’ skills, increasing opportunities, reducing menial and dangerous work, and increasing productivity. Recent technological advances have led to sizable increases in knowledge- and care-intensive jobs. Nursing, for instance, an occupation on the rise, is a dangerous occupation. Recent studies have found that 56 percent of nurses suffer from musculoskeletal pain related to their work within the past year (ANA 2011). Technology is changing this. Assistive patient handling equipment, such as the Robear, aids nurses and other workers in lifting and maneuvering patients, increasing workers ability to perform their job and avoid injury. Other examples of changes in technology that complement labor include: medical devices for surgeons, IT complementing workers that perform task-intensive jobs, IT and employment for bank tellers.22 Future technological change will both complement and substitute for labor. While commentators have continuously focused on automation as a means to displace workers, resulting in a bleak outlook for the future of work, much more attention should be directed at technologies that are complementing work. When technology complements workers, workers are more likely to share in the benefits through increased wages, improved working conditions, and more. Further, when technology and labor are complementary, output is raised in a fashion that is likely to lead to higher demand for workers, which is exactly how the reality of technological change has unraveled historically.

### Sustainability---AT: Cognitive Collapse

#### No cognitive collapse from growth.

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It’s an evergreen joke among Italians that, whenever in doubt on whatever the issue, one should always blame the government. Even for bad weather, the response applies: Piove? Governo ladro! But there is another option. It is just as easy to blame capitalism.

As Francesco Boldizzoni has shown, the charges leveled against capitalism are as old as capitalism itself. Whether the problem is poverty or excessive affluence, imperialism or delocalization, globalization, war, human rights infringement, inner-city poverty, lack of affordable housing, climate change, environmental degradation, loss of morality, long working hours, misogyny, white supremacy, or some other wrong, fingers inevitably point to the usual culprit. The push for “unnecessary economic growth” is no exception, as degrowth sympathizers see behind it the evil juggernaut of capitalism. Blaming something on an abstract concept, or on its vaguely identified supporters (“capitalists”) can surely feel liberating, in the way that attacking a generic “establishment” does. It allows the blame to shift outward, releasing individuals from personal responsibility. In the words of degrowth guru Jason Hickel, “People are victims of the system.”1

At the same time, such an approach is highly unhelpful, because it prevents engagement in deeper inquiry. We saw when we delved into the mechanics of capitalism in Chapter 2 that, while there are some inbuilt features such as competition among firms which feed the growth imperative, our economic system could in principle be just as compatible with zero growth if this were what consumers desired. Along similar lines, we saw in Chapter 3 how ecosocialism could in principle be made to work if a “less is more” ideology were embraced at once by the entire population of a country (or, ideally, all of humanity).

Typically, however, such lines of thinking are not developed very far before the critics of capitalism throw up their hands in helpless gestures. Going back to square one, capitalism is portrayed as the puppet master forcing human beings to act in ways they would not choose, for example by generating “artificial scarcity” to drive levels of consumption they do not even enjoy. Consumers are presented as behaving contrary to the wishes of humans, despite these being the same population.2 Even John Kenneth Galbraith, fine economist that he was, fell back on this defenseless posture, arguing that people kept consuming more only because they were victims of advertising. And capitalism has more arrows than advertising in its quiver. From spurring shoppers with sales promotions to conjuring up new giftgiving traditions, it has untold ways to generate unnecessary purchases. Worst of all, perhaps, is that prime suspect: planned obsolescence.3

To the contrary, I see pervasive advertising and planned obsolescence— but also marketing and branding more generally—as practices that firms engage in to escape the mechanics of capitalism and the tough logic of innovation-based competition.4 They are attempts to win some reprieve from the sentence to “innovate or die,” and while important, their effects are circumscribed.5 Rather than the evil tools of capitalism, they are, at worst, by-products of a system in which firms discover that product and process innovation are hard to accomplish. In any case, they are in no way central to capitalism’s survival. Indeed, if we look at degrowth advocates’ favorite examples of limiting these practices, such as the Norwegian ban on advertising to children under twelve, or Paris’s ban on advertising near schools, it is notable that they all come from advanced capitalist countries.

### Sustainability---AT: Non-Carbon Environment

#### They’re wrong about non-carbon impacts too – phosphorus, nitrogen, water, land use, defo, and cafos

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Unless us folks in rich countries drastically reduce our material living standards and distribute most of what we have to people living in poor countries, the world will come to an end. Or at least that's the stark conclusion of a study published earlier this month in the journal Nature Sustainability. The researchers who wrote it, led by the Leeds University ecological economist Dan O'Neill, think the way to prevent the apocalypse is "degrowth." Vice, pestilence, war, and "gigantic inevitable famine" were the planetary boundaries set on human population by the 18th-century economist Robert Thomas Malthus. The new study gussies up old-fashioned Malthusianism by devising a set of seven biophysical indicators of national environmental pressure, which they then link to 11 indicators of social outcomes. The aim of the exercise is to concoct a "safe and just space" for humanity. Using data from 2011, the researchers calculate that the annual per capita boundaries for the world's 7 billion people consist of the emission of 1.6 tons of carbon dioxide per year and the annual consumption of 0.9 kilograms of phosphorus, 8.9 kilograms of nitrogen, 574 cubic meters of water, 2.6 tons of biomass (crops and wood), plus the ecological services of 1.7 hectares of land and 7.2 tons of material per person. On the social side, meanwhile, the researchers say that life satisfaction in each country should exceed 6.5 on the 10-point Cantril scale, that healthy life expectancy should average at least 65 years, and that nutrition should be over 2,700 calories per day. At least 95 percent of each country's citizens must have access to good sanitation, earn more than $1.90 per day, and pass through secondary school. Ninety percent of citizens must have friends and family they can depend on. The threshold for democratic quality must exceed 0.8 on an index scale stretching from -1 to +1, while the threshold for equality is set at no higher than 70 on a Gini Index where 0 represents perfect equality and 100 implies perfect inequality. They set the threshold for percent of labor force employed at 94 percent. So how does the U.S. do with regard to their biophysical boundaries and social outcomes measures? We Americans transgress all seven of the biophysical boundaries. Carbon dioxide emissions stand at 21.2 tons per person; we each use an average of 7 kilograms of phosphorus, 59.1 kilograms of nitrogen, 611 cubic meters of water, and 3.7 tons of biomass; we rely on the ecological services of 6.8 hectares of land and 27.2 tons of material. Although the researchers urge us to move "beyond the pursuit of GDP growth to embrace new measures of progress," it is worth noting that U.S. GDP is $59,609 per capita. On the other hand, those transgressions have provided a pretty good life for Americans. For example, life satisfaction is 7.1; healthy life expectancy is 69.7 years; and democratic quality stands at 0.8 points. The only two social indicators we just missed on were employment (91 percent) and secondary education (94.7 percent). On the other hand, our hemisphere is home to one paragon of sustainability—Haiti. Haitians breach none of the researchers' biophysical boundaries. But the Caribbean country performs abysmally on all 11 social indicators. Life satisfaction scores at 4.8; healthy life expectancy is 52.3 years; and Haitians average 2,105 calories per day. The country tallies -0.9 on the democratic quality index. Haiti's GDP is $719 per capita. Other near-sustainability champions include Malawi, Nepal, Myanmar, and Nicaragua. All of them score dismally on the social indicators, and their GDPs per capita are $322, $799, $1,375, and $2,208, respectively. The country that currently comes closest to the researchers' ideal of remaining within its biophysical boundaries while sufficient social indicators is...Vietnam. For the record, Vietnam's per capita GDP is $2,306. "Countries with higher levels of life satisfaction and healthy life expectancy also tend to transgress more biophysical boundaries," the researchers note. A better way to put this relationship is that more wealth and technology tend to make people happier, healthier, and freer. O'Neill and his unhappy team fail drastically to understand how human ingenuity unleashed in markets is already well on the way toward making their supposed planetary boundaries irrelevant. Take carbon dioxide emissions: Supporters of renewable energy technologies say that their costs are already or will soon be lower than those of fossil fuels. Boosters of advanced nuclear reactors similarly argue that they can supply all of the carbon-free energy the world will need. There's a good chance that fleets of battery-powered self-driving vehicles will largely replace private cars and mass transit later in this century. Are we about to run out of phosphorous to fertilize our crops? Peak phosphorus is not at hand. The U.S. Geological Survey (USGS) reports that at current rates of mining, the world's known reserves will last 266 years. The estimated total resources of phosphate rock would last over 1,140 [a thousand] years. "There are no imminent shortages of phosphate rock," notes the USGS. With respect to the deleterious effects that using phosphorus to fertilize crops might have outside of farm fields, researchers are working on ways to endow crops with traits that enable them to use less while maintaining yields. O'Neill and his colleagues are also concerned that farmers are using too much nitrogen fertilizer, which runs off fields into the natural environment and contributes to deoxygenated dead zones in the oceans, among other ill effects. This is a problem, but one that plant breeders are already working to solve. For example, researchers at Arcadia Biosciences have used biotechnology to create nitrogen-efficient varieties of staples like rice and wheat that enable farmers to increase yields while significantly reducing fertilizer use. Meanwhile, other researchers are moving on projects to engineer the nitrogen fixation trait from legumes into cereal crops. In other words, the crops would make their own fertilizer from air. Water? Most water is devoted to the irrigation of crops; the ongoing development of drought-resistant and saline-tolerant crops will help with that. Hectares per capita? Humanity has probably already reached peak farmland, and nearly 400 million hectares will be restored to nature by 2060—an area almost double the size of the United States east of the Mississippi River. In fact, it is entirely possible that most animal farming will be replaced by resource-sparing lab-grown steaks, chops, and milk. Such developments in food production undermine the researchers' worries about overconsumption of biomass. And humanity's material footprint is likely to get smaller too as trends toward further dematerialization take hold. The price system is a superb mechanism for encouraging innovators to find ways to wring ever more value out less and less stuff. Rockefeller University researcher Jesse Ausubel has shown that this process of absolute dematerialization has already taken off for many commodities. After cranking their way through their models of doom, O'Neill and his colleagues lugubriously conclude: "If all people are to lead a good life within planetary boundaries, then the level of resource use associated with meeting basic needs must be dramatically reduced." They are right, but they are entirely backward with regard to how to achieve those goals. Economic growth provides the wealth and technologies needed to lift people from poverty while simultaneously lightening humanity's footprint on the natural world. Rather than degrowth, the planet—and especially its poor people—need more and faster economic growth.

### Sustainability---AT: EROI / Thermodynamics

#### Constraints based on EROI, thermodynamics, and complexity are nonsense. Static predictions ignore price and innovation responses.

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To calculate Energy Return on Energy Investment (EROEI, sometimes simplified to EROI) is essentially to find the ratio of the amount of energy delivered from a particular energy source to the amount of energy needed to obtain that source. The concept was popularized by system ecologist Charles A. Hall in the 1980s and, while it remains somewhat of a niche interest, the logic behind it is worth exploring. It frequently resurfaces in discussions on the future of economic growth, especially among degrowth advocates and in the work of natural scientists.

Hall first computed EROEI estimates for a variety of energy sources and across time. Then, he showed that the EROEI for each energy source is on a long-term declining trend. This is intuitively clear: the supplies that are most easily accessible are used first. For instance, the EROEI for oil and gas in the United States was greater than 100 in 1919—100 units of energy were delivered for every unit spent accessing it. By the 2010s, this EROEI fell to under 10. Renewables currently have very low EROEI, around 10 for solar PV and 18 for wind.1

As EROEI descends to lower levels, more and more resources are needed to extract the same amount of energy. In the end, as EROEI converges toward 1, a point known as the “net energy cliff,” the economic system must either stabilize or collapse, as all resources in society (all of GDP, in other words) must be devoted to extracting energy. 2

Effectively, and linking back to the discussion in Chapter 1, Hall is implying that technological progress will not be large or fast enough to offset the declining quality of energy. In his words, “The decline in EROI among major fossil fuels suggests that in the race between technological advances and depletion, depletion is winning.” Considering this to be a fatal blow to the illusions sold by the economic profession, Hall concludes, “Increasing prices, thought by most economists to negate depletion through increasing incentives for exploitation, cannot work as EROI approaches 1:1, and even now has made oil too expensive to support the high economic growth it once did.”3

To begin with, precise calculations of EROEI build on incredibly heroic assumptions. While the output side is relatively easy to measure, the input side is fraught with complications, especially regarding where the calculation should start and stop in the supply chain. Should the starting point be the energy extraction point, such as the oil well? Of course, much additional energy is used downstream from that point to refine the oil and turn it into usable fuel. Meanwhile, looking upstream, energy is certainly used in the drilling process, but why stop there? Why not take into account the energy used to transport the drill to the well, to manufacture it, and to extract the raw materials used for that? At the extreme, one might even account for the energy embedded in the meals of the workers involved in the process. As energy guru Vaclav Smil writes in Energy and Civilization, EROEI “is a revealing measure only if we compare values that have been calculated by identical methods using standard assumptions and clearly identified analytical boundaries.”4 It can then be used to show, for instance, why the rich Middle Eastern oil fields have been preferred to other, lowerproductivity wells. It becomes more problematic when the challenge is to make comparisons across energy sources.

EROEI might be a useful indicator for energy and engineering analyses, but from an economics perspective, its use to predict the future of growth looks rather odd. So far the evidence, prima facie, does not seem very convincing. Over the last century, during the “Age of Petrol,” the EROEI for oil collapsed by a factor of 10, and yet world real GDP expanded twenty- six-fold.

What is more puzzling, as with the systems dynamics World3 model underlying The Limits to Growth, the concept of EROEI assigns no role to (relative) prices, instead focusing narrowly on absolute quantities.5 To inquire into this choice is typically to be met with sardonic statements mocking economists for lacking understanding of basic thermodynamics. Given the criticism, let us build on the words of quantum physicist Mark Buchanan: “if other factors remain fixed, a temporary drop in EROI, for any reason, means we need to use up more energy in producing energy, and therefore have less to spend on real economic activity—on this logic, economic growth should then falter.”6 The fact is that “other factors” do not remain fixed. Consider that, as the EROEI falls, and more investment is needed to extract resources, the price of the energy source should increase.7 As this happens, if, as Hall suggests, it is not technically feasible to devise more efficient recovery techniques, what will adjust is the economy itself.8

Grubb et al (2018) show that, across fifty years and over thirty countries, the long-run energy expenditure relative to GDP remained practically constant, within the range of 8 percent of GDP (plus or minus 2 percent), irrespective of energy prices.9 When prices increase, as they did during the 1970s oil crises, this leads of course, in the short term, to an increase in the fraction of GDP paid for energy, and recessionary effects. Over the long term, however, significant energy efficiency improvements bring economies back to equilibrium. The effect is symmetric: low prices induce waste, causing energy productivity and innovation to slow down, which leads energy costs back up again.

What matters for economic growth, and ultimately to people, is not the absolute quantities of a specific energy source, but rather the “services” that energy is needed for. Energy expert Roger Fouquet shows that, because of efficiency improvements, the cost of consuming one unit of energy service has declined faster than the price of energy in the long run.10 Dramatic improvements are possible in energy services: in 2000, lighting in the United Kingdom cost less than one three-thousandth of its 1800 value.11 This implies that, for a constant level of energy consumption, it is possible to expand the energy services and therefore the size of the economy.

All in all, and linking to The Limits to Growth, we should recognize that it is generally problematic to extend the modeling techniques and concepts of system ecology, or even physics, to the realm of economics. While the former are sciences grounded in hard natural laws, where, say, only two atoms of hydrogen and one of oxygen can produce a molecule of water, economics is very much a social science, where flows and relationships are much more adaptable to evolving external conditions.

### Sustainability---AT: Financialization

#### Financialization’s sustainable – criticism’s unwarranted reductionism

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Critics of neoliberal capitalism rarely recognize the productive power of speculation. If there is one theme that unites the various critiques of contemporary finance, it is the emphasis on its speculative character. Financial growth is said to be driven not by the logic of efficient markets, but rather by irrational sentiment, “animal spirits” that do not respect fundamental values. Emphasizing the role of volatility in contemporary capitalism (evident at the time of writing, as the stock market is experiencing a downturn) is important as an antidote to notions of market efficiency and equilibrium. But it is a mistake to think that it provides a sufficient basis for effective critique. Predictions regarding the limits or collapse of neoliberal finance have simply not enjoyed a good track record. Over and over, the contemporary financial system has proven capable of sustaining higher levels of speculative activity than anticipated. This has certainly been true of the past decade. Capital and Time: For a New Critique of Neoliberal Reason is my attempt to make sense of this—that is, to understand what might be wrong or missing in the existing heterodox critique of speculation, and to advance a more accurate understanding of the role of uncertainty, risk, and speculation in contemporary capitalism. At the heart of the critique of speculation we find a distinction between real and fictitious forms of value. Although “essentialist” (or “foundationalist”) modes of explanation have been under fire across the social sciences for several decades now, when it comes to the critique of finance they have had considerable staying-power: without a notion of real value, it often seems, we lose any objective standard against which to assess the speculative gyrations of capitalist markets. Capital and Time asks what kind of critical theory we might develop if we bracket the anxious attachment to a notion of fundamental value. To that end, it turns to the work of economist Hyman Minsky. Although Minsky has been popularized precisely as a critic of speculation, he in fact insisted that almost all value judgments and investments were to some degree speculative—their success or failure would be determined in an unknown future. For him, the key economic question is how order emerges in a world that offers no guarantees, how more or less stable standards and norms arise amidst uncertainty. Of course, the “endogenous” origin of financial standards is a well-rehearsed theme in heterodox economics—indeed, it is a staple of the “post-Keynesian” literature that claims Minsky’s legacy. But such perspectives have never been able to break with the idea that financial stability is at its core dependent on external interventions that suppress speculative impulses. For Minsky, however, this is to miss the point about endogeneity. To his mind, there was no clear dividing line between financial practices and their governance: central banks and other public authorities are no more able to see into the future and to transcend uncertainty than private investors are. Minsky was therefore highly skeptical about official claims of discretionary precision management: financial governance is always embroiled in the very risk logic that it is charged with managing. That also means that financial policy can appear quite ordinary, even banal: at the heart of capitalist financial management is a logic of backstopping and bailout that responds to the possibility that the failure of an institution may take down wider financial structures. The stability of the post-New Deal financial system is often attributed to the Glass-Steagall separation of the stock market and commercial banking. But Minsky tended to view Glass-Steagall as one of several measures to direct bank credit away from the stock market towards other, no less speculative ends, notably consumer and mortgage financing. To his mind, the stability of the post-war period derived rather from the creation of an extensive financial safety net (which included, for instance, deposit insurance, which removed the rationale behind bank runs) that served to socialize risk. This institutional arrangement turned out to have a significant drawback: a pattern of chronic inflation emerged that, by the late 1970s, was widely perceived as a major problem. Minsky’s lack of faith in the possibility of cleanly staged external interventions led him to feel that that there was no real way out of this predicament. Monetarist doctrines, ascendant during the 1970s under the influence of Milton Friedman, relied on exactly the belief in an arbitrarily defined monetary standard that Minsky rejected as naïve. Muddling through, it seemed, was the price of avoiding another financial crash and depression. The Volcker shock of 1979 changed this dynamic in a way that Minsky had not foreseen but that is comprehensible when seen through the lens he provided us with. Paul Volcker looked to monetarism not as a means to enforce an external limit or standard on the financial system, but as a politically expedient way to break with accommodating policies and to proactively engage the endogenous dynamics of finance. The consequences of the Volcker shock were predictable (which is exactly why the Federal Reserve had been reluctant to pursue similar policies in previous years): inflation gave way to instability and crisis. Inflation was conquered as jobs were lost and wages stagnated. And, far from money being returned to its neutral exchange function, opportunities for speculation multiplied. The American state was never going to sit idly by as the financial system returned to dynamics of boom and bust: when instability took the form of systemic threats, authorities would bail out the institutions that had overextended themselves. Of course, Volcker would not have been able to predict the specific features of the too-big-to-fail regime as it emerged during the 1980s and evolved subsequently; but the very point of the neoliberal turn in financial management that he had overseen was to create a context where risk could be socialized in ways that were more selective and therefore did not entail generalized inflation. The inflation of asset values that has been such a marked feature of the past four decades has always been premised centrally on the willingness of authorities to view the “moral hazard” of the too-big-to-fail logic as a policy instrument—even if they may have decried it officially as a regrettable corruption of market principles. Spectacular bailouts, mundane policies to protect the key nodes of the payment systems, the “Greenspan put”, the different iterations of quantitative easing—these are all variations on that basic too-important-to-fail logic. Existing critical perspectives tend to view crisis and the need for bank bailouts as manifesting the essential incoherence of neoliberal finance, its lack of solid foundations and the irrationality of speculation. Capital and Time breaks with such moralistic assessments. The way deepening inequality and the speculative growth of asset values continue to feed off each other is troubling for any number of reasons, but there is nothing inherently “unsustainable” about it—the process does not have a natural or objective limit. At this point in time, the critique of speculation does little more than lend credibility to official discourses that present crises as preventable and bailouts as one-off, never-to-be-repeated interventions. In that way, it prevents us from critically relating to a neoliberal reality that has been shaped to its core by the speculative exploitation of risk and uncertainty, and in which regressive risk socialization serves as the everyday logic of financial governance.

### Sustainability---AT: Random Resources

#### Single resources can run out without causing collapses or impacts. Markets will ration or replace them, even with overpopulation.

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Infinite innovation on a finite planet

Diehard degrowth advocates might now point out that such a technologyled plan to tackle climate change will require large material inputs to get everything electrified and get new renewable power plants built. And because “you can’t produce stuff out of thin air,” as their slogan goes, that is the end of innovation; we are simply kicking the can down the road because, on a finite planet, we are bound to run out of raw materials.

On this point, as President Obama liked to say, “let me be as clear as I can be.” Innovation, and therefore economic growth, will not run out of materials, because the very definition of a production material depends on what is available. This is something we have observed throughout human history. Societies solve problems using what they have on hand. Think of a widespread basic technology like writing, developed by many societies independently to meet exigencies of commerce first, and then knowledge accumulation more broadly. Depending on location and existing technology, several writing materials have been used throughout history—stone tablets, clay tablets, bamboo slats, papyrus, wax tablets, vellum, parchment, paper, and copperplate—all depending on local availability. The same could be said of basic navigation, which has been with humanity since prehistoric time: early vessels were built using techniques and materials from bamboo and logs to reeds and leather, based on material availability and local needs.

In 1968, biologist Paul Ehrlich caused a sensation by predicting, in The Population Bomb, that humanity would run out of resources and people would be starving to death before the next decade was out. The only escape in his view was strict population control, of the type implemented by China with its “one-child policy” ten years later. It was the Malthusian story redux, and just as in Malthus’s time, the power of innovation was underestimated. At the time, economist Julian Simon made a famous scientific wager. He challenged Ehrlich to pick any five commodities, saying that regardless of the choices he would bet on their prices being lower ten years later. Ehrlich picked ones that looked likely to run out: copper, chromium, nickel, tin, and tungsten. By the end of the decade, all were priced lower. It is important to understand that it is not that Simon got lucky. Rather, he understood the dynamics of capitalist markets: as the price of a commodity goes up, it activates a rationing mechanism whereby buyers shift away from that material—and this prods the innovation machine to find alternatives, or devise more efficient ways to use what is available.37 The reason that the price of tin, for example, went down is that aluminum became a cheaper and better substitute for it.

Aluminum has a neat story of its own. It is the most abundant metal in the Earth’s crust. And yet, up until the 1880s, when a method for melting and electrolyzing its ore was invented, it was prohibitively expensive, meaning it was not a production material, but treated more as a precious metal. Dartnell reports the curious episode of an imperial banquet organized by Napoleon III in the first half of the nineteenth century. In this setting, aluminum cutlery was displayed as an ostentatious show of power, reserved for the most distinguished dinner guests, while less favored guests used knives and forks of simple gold. The very definition of what is a commodity, and useful in production, varies across centuries, and depends on availability.

The concern that some input material will come to an end, and that this crisis will deal a fatal blow to civilization, is a recurrent theme in history. In Britain, the fear was expressed in the age of sail that when the country was depleted of oak, the fundamental wood used in shipbuilding and masts at the time, the country would become defenseless at sea. Clearly, this did not happen; eventually iron replaced the need for wood, and in the meantime, sufficient supplies came through trade with Scandinavia, the Baltics, and North America. For goods that cannot be replaced, prices generate strong incentives to become better at extracting and recycling them.38 Think of copper, which has good properties as an electrical conductor. As electrification was in full swing in the early twentieth century in the United States, geologist and copper-mining expert Ira Joralemon warned that “the age of electricity and of copper will be short. At the intense rate of production that must come, the copper supply of the world will last hardly a score of years.… Our civilization based on electrical power will dwindle and die.” One century later, we can see that this prediction did not age well.

It is not even a necessity that the bulk of our technological solutions must be based on geological materials. Think, for example, of recent research on fertilizers, based on the discovery that certain bacteria can capture atmospheric nitrogen, without the high pressures and temperatures of the polluting Haber-Bosch process described above. Likewise, the research frontier is shifting toward new materials, opening up the possibility of producing consumer goods with algae-based bioplastic. It would seem that if the twentieth century was characterized by the triumph of inorganic chemistry, the twenty-first might well be the century of organic materials, repurposed to meet human needs. This age is being ushered in by the advent of biotechnology which, also thanks to recent advances like Crispr / Cas9, will provide powerful tools to address current challenges, from reducing the use of pesticides and herbicides in agriculture to fostering natural carbon sequestration.

Innovation not only yields new technologies and products, but also allows more value to be extracted from what is already available. Under the heading of more efficient material use falls, for example, the idea of the circular economy, in which society is organized to reuse or recycle extensively, and rely less on new material extraction. The digital revolution has also caused the economy to be more and more “dematerialized” in production and consumption, as it becomes more based on intangible goods.39 This is what economist Danny Quah refers to as the “weightless economy.” Another push toward more efficient use of reduced material inputs is known as the “sharing economy,” as seen recently in urban settings with cars, mopeds, home rentals, and coworking spaces. Under this model, people shift from individual ownership of an asset to an arrangement, usually employing digital technology, by which it can be shared by multiple users, collectively extracting more utility out of the same amount of material.

Andrew McAfee shows in More from Less the extent to which the American economy has dematerialized since the 1970s, including by slashing its consumption of virtually all the seventy-two material resources tracked by the US Geological Survey, including minerals, timber, and cement, whether domestically sourced or imported. In its agricultural sector, the United States managed to increase crop production by 35 percent between 1982 and 2015, while reducing the use of fertilizers and returning to nature an amount of land equivalent to the state of Washington (45 million acres). The same combination of productivity enhancements and dematerialization has allowed many advanced economies to see reforestation and economic growth progressing together over the past three decades.40

To sum up this discussion, an old quip might suffice: The Stone Age did not come to an end because we ran out of stones. Likewise, the age of oil and gas will not end because we will run out of those, and innovation will not come to an end because we run out of material inputs. While in theory, and strictly speaking of physical inputs, it is conceivable that a finite planet could be depleted of all materials at once, as a practical reality this is not a concern. Assuming that point were ever reached, it would be in a future so distant that, by then, our material sources would probably not be confined to this planet.

Is technological progress inevitable?

As we saw earlier, there is an evolutionary logic to innovation and knowledge accumulation, and as in natural evolutionary processes there is no inevitability of success. At first blush, this might seem like a pessimistic statement. After all, human-made innovation is a faster and more efficient mechanism than natural evolution, given that technical solutions, unlike mutations in Darwinian natural evolution, do not happen by chance.41 Innovations are designed to solve the problems of the moment.42 This implies that, while the concept of progress does not make sense in biological evolution, it could in social progress, if that is interpreted as sustained knowledge cumulation and increased societal complexity. 43

So why is it not the case that humanity is on a safe stride toward neverending progress, powered by technology and knowledge accumulation? Is it that we are at risk of running out of ideas? In the end, if everything is bounded, shifts in prices and needs notwithstanding, can’t science, innovation, and ultimately human ingenuity be bounded as well? For practical purposes, the answer can safely be no.

Nobel laureate economist Paul Romer has built productively on the concept of ideas as instructions for arranging atoms and for using the arrangements to meet human needs. For thousands of years, silicon dioxide provided utility mainly as sand on the beach, but now it delivers utility through the myriad goods that feature computer chips. Throughout history, humans have mixed elements together at different temperatures and pressures to see what comes out. The Bronze Age began with an idea to mix tin and copper. Later, mixing carbon and iron turned into another powerful metal: steel. Later yet, in the 1980s, mixing copper, yttrium, barium, and oxygen created a superconductor. Taking the periodic table, and applying combinatory calculus to just the first ten of its elements, Romer shows there are more possible combinations than there have been seconds since the Big Bang—and this does not even take into account that different proportions would generate different compounds. “There have been too few people on Earth,” Romer concludes, “and too little time since we showed up, for us to have tried more than a minuscule fraction of all the possibilities.”44

In a less mathematical vein, having reviewed thousands of years of human technology development, Dartnell shows that all new inventions build on previous ones. Developments in glass, for instance, made it possible to create new instruments, including telescopes and microscopes, which in turn opened new worlds for research.45 The more that is discovered, the more new opportunities are revealed.46 This is particularly the case where the scientific method is employed, and investigations are guided by hypotheses based on theories. Where there is no guiding theory, as noted by Mokyr, advances associated with new inventions tend to fizzle out, and fail to lay foundations for next steps.47 Simple tinkering and learning-by-doing soon reach a point of diminishing returns, or require a serendipitous event to make another productive leap.48 In the face of all this, evolutionary biologist Stephen Jay Gould bluntly concluded years ago that we are so far from the limits of knowledge that it is not even worth posing the question of when they will be reached.

Given that the more we discover the more we open up space for new discoveries, and that the upper bound of knowledge is so far off that it is not even worth discussing, one might assume that humanity is on a sure march toward betterment. Unfortunately, that is not quite so. Up until now, we have discussed only the feasibility side, which simply implies that unbound progress is possible, not that it is inevitable. We know that extremely fast technical progress brings with it social complications. On the economic side, for example, innovation generally entails some degree of technological unemployment, creating winners and losers. With regard to economic inequality, increasing R&D spending can make wealth gaps wider, as it helps skew income distribution in favor of high-skilled labor. 49 Innovation also creates cultural issues, as a changing world can undermine longstanding values at a speed that feels unsettling to some. As a consequence, feasible though it may be, technological development has not progressed linearly through history. In China, for example, innovation flourished during the Tang and Song dynasties, in cultural conditions that were conducive to it, but then stagnated in the Ming and Qing dynasties. Often across history fast innovation has been followed by a period of retrenchment or stagnation, as conflict and disorder occur. 50

### Sustainability---AT: Rebound

#### Substitution does cause absolute decoupling – BUT even if it doesn’t, still outweighs rebound in terms of their impacts

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Can we reduce environmental impact even as countries grow wealthier? Is consumption inherently tied to impact? These are core environmental questions facing us today, hinging on the notion of “dematerialization,” or the reduction of the amount of raw materials needed to make useful products. If we can dematerialize the economy, the argument goes, we might also be able to mitigate our impact on the environment. A recent MIT-led study on global dematerialization, however, sheds some disheartening light on this idea. Examining consumption trends for dozens of chemicals and commodities over time, the authors find no evidence, for most products, of absolute dematerialization. That is, even though technological change has increased the efficiency of many materials examined, this efficiency has not resulted in any absolute decrease in their consumption. As the study’s lead author Christopher Magee said in a press release, “There is a techno-optimist’s position that says technological change will fix the environment. This says, probably not.” “Fixing the environment,” however, is a different issue than reducing consumption for a set of materials. Decoupling environmental impact from economic growth does remain crucial to saving more nature, and we’re still far from reaching the point of “peak stuff.” Looking at consumption trends is thus an important part of the equation, but we also need to determine how consumption relates to specific environmental impacts like land use, water use, greenhouse gas emissions, and pollution. Although consumption is often linked with environmental impact, the relationship is not one-to-one: different materials entail very different production processes with differing impacts on the environment. Let’s take a closer look at what the study tells us. The authors’ central question revolves around whether technological progress truly allows us to make more using less, or whether increased efficiency simply leads to increased consumption. This “rebound” effect is also called the Jevons Paradox, which dates back to the 19th century English economist William Jevons, who observed that as new technologies reduced the price of coal, coal consumption increased. For their part, the study’s authors examined technological change and consumption trends for a group of chemicals, materials (like aluminum and polyester), and hardware products (like silicon transistors), and similarly found that while technological improvements have reduced the price and increased the efficiency of many of these products, those improvements have “rebounded” in the form of increased consumption. Silicon transistors, which are used in all our modern electronics, provide a prime example of this effect: as improved technology has radically decreased the amount of raw silicon needed to produce a transistor over time, we have also found all sorts of novel ways to use transistors as we invent new technologies and hardware. This increase in demand has outpaced the production efficiency such that today we’re consuming more silicon than ever. So what this study tells us is that we’re consuming more aluminum, polyester, and silicon, even as technology allows us to use these materials more efficiently. But what if greater consumption of some materials substitutes for other activities that have greater environmental impact? Indeed, the authors raise this as an important area for further study, highlighting unanswered questions about the role of silicon semiconductors, for instance, in substitution. As our increased use of this technology enables us to communicate virtually, they ask, does it also reduce the amount of of emissions-intensive car rides and flights? Do more silicon-based solar panels allow us to use fewer fossil fuels for electricity production? Increased use of some materials, after all, can lead to a decreased use of others, making it more complicated to account for the full environmental trade-offs associated with material use. Furthermore, not all commodities involve equal environmental impact. The materials reviewed in the study all come from somewhere, whether they are mined, refined, or produced through other industrial processes. What impact do these processes have on the environment, though? When we look at global environmental threats, the biggest driver of land-use change and biodiversity loss is agricultural expansion, not mining or fossil fuel extraction. As Breakthrough’s Linus Blomqvist pointed out in an article last year, the volume of resource consumption does not necessarily provide a direct prediction of environmental impact. To assess the study’s relevance for the global environment, it would be important to know how the commodities included rank as global sources of greenhouse gases, water consumption, and pollution, and whether their production processes have become more environmentally friendly over time. It would also be interesting for future analyses to examine these consumption trends at the regional level. While global consumption of many of these products continues to increase, there may be significant regional variation that would offer some important insight. It is possible, for instance, that consumption of some materials in wealthy countries has actually peaked and started to decline as a result of stable population sizes and the demand saturation that can come with affluence. This pattern could also spread to other regions in the future, as developing countries grow wealthier and population growth slows or even reverses. Ultimately, dematerialization provides an important metric for understanding our environmental footprint, but it doesn’t tell the whole story. Greater efficiency can certainly lead to increased consumption when we make really useful things, like silicon transistors, cheaper and more widely available. But it is also technological progress that allows us to substitute toward less environmentally damaging sources of material and energy, and to produce the same goods using less land, water, and fossil fuels. We may not see evidence of absolute dematerialization yet, but that doesn’t mean we should lose sight of the major ways in which technology helps us to reduce our environmental impact.

### Sustainability---AT: Too Slow

#### They’re much slower – even assuming they’re right about everything

Linus Blomqvist 18. Director of the Conservation and Food & Agriculture programs at the Breakthrough Institute, visiting researcher at the University of Tasmania where he is part of a team studying drivers of agricultural expansion and forecasting future land-use change, MESc from Yale’s School of Forestry and Environmental Studies, where he specialized in environmental economics, and a BA in Geography from Cambridge University. 2018. “Green Growth Is Still Possible: A Response to the Decoupling vs. Degrowth Debate.” Breakthrough Institute. https://thebreakthrough.org/issues/conservation/decoupling-debate

Now, the issue of Hickel’s proposed solution: slowing GDP growth. The strongest argument against decoupling as a pathway towards a sustainable human future isn’t that it’s impossible, as Hickel claims, but that it isn’t occurring quickly enough to prevent unacceptable environmental impacts. On the one hand, we seem to be moving in the right direction: GDP growth slows down as countries get richer, as does population growth, and technology keeps on its steady march towards higher efficiency. Rebounds in consumption do occur as a result of rising affluence, but research indicates that they do not typically negate the environmental benefits of modernization. At the same time, one may believe that decoupling trends may be insufficient at their current trajectory. If one believes that decoupling is occurring too slowly, one may be inclined to also advocate for slowing economic growth in wealthy nations, as Hickel suggests. “Perhaps Blomqvist – or anyone at the Breakthrough Institute – could explain why they think that rich, high-consuming nations (like the US, for instance) need to keep growing their GDP (forever?), when we know that additional growth is not generating any better social outcomes.” There is substantial reason to doubt that reducing GDP growth in the developed world will have the environmental benefit that Hickel seemingly believes it must, given that it is in developed countries that the promising decoupling trends have emerged. Further, in rich countries, GDP and population growth have already slowed, and demand for many goods has saturated. What about developing countries? Given Hickel’s fixation on consumption, he should be most concerned about the developing world, where the great majority of growth in resource use is going to come from. But it’s not clear what his proposal is here. This isn’t surprising. Intentionally slowing GDP growth in developing countries is a problematic political and ethical proposition, given how much these countries would benefit from higher incomes, better infrastructure, and more employment. I would also argue that limiting GDP growth in poor countries is likely to delay the very transitions we need to achieve peak impact: slower population growth and higher efficiency. For these reasons, I remain convinced that modernization and technological change still seem like the best shot we have at reaching peak impact.

### Biod D---1NC

#### No environmental collapse or extinction

Peter Kareiva 18, Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al., September 2018, “Existential risk due to ecosystem collapse: Nature strikes back,” Futures, Vol. 102, p. 39-50

The interesting question is whether any of the planetary thresholds other than CO2 could also portend existential risks. Here the answer is not clear. One boundary often mentioned as a concern for the fate of global civilization is biodiversity (Ehrlich & Ehrlich, 2012), with the proposed safety threshold being a loss of greater than 0.001% per year (Rockström et al., 2009). There is little evidence that this particular 0.001% annual loss is a threshold—and it is hard to imagine any data that would allow one to identify where the threshold was (Brook, Ellis, Perring, Mackay, & Blomqvist, 2013; Lenton & Williams, 2013). A better question is whether one can imagine any scenario by which the loss of too many species leads to the collapse of societies and environmental disasters, even though one cannot know the absolute number of extinctions that would be required to create this dystopia. While there are data that relate local reductions in species richness to altered ecosystem function, these results do not point to substantial existential risks. The data are small-scale experiments in which plant productivity, or nutrient retention is reduced as species numbers decline locally (Vellend, 2017), or are local observations of increased variability in fisheries yield when stock diversity is lost (Schindler et al., 2010). Those are not existential risks. To make the link even more tenuous, there is little evidence that biodiversity is even declining at local scales (Vellend et al., 2013, 2017). Total planetary biodiversity may be in decline, but local and regional biodiversity is often staying the same because species from elsewhere replace local losses, albeit homogenizing the world in the process. Although the majority of conservation scientists are likely to flinch at this conclusion, there is growing skepticism regarding the strength of evidence linking trends in biodiversity loss to an existential risk for humans (Maier, 2012; Vellend, 2014). Obviously if all biodiversity disappeared civilization would end—but no one is forecasting the loss of all species. It seems plausible that the loss of 90% of the world’s species could also be apocalyptic, but not one is predicting that degree of biodiversity loss either. Tragic, but plausible is the possibility of our planet suffering a loss of as many as half of its species. If global biodiversity were halved, but at the same time locally the number of species stayed relatively stable, what would be the mechanism for an end-of-civilization or even end of human prosperity scenario? Extinctions and biodiversity loss are ethical and spiritual losses, but perhaps not an existential risk.

#### The environment’s rebounding

Dr. Alex Berezow 19, PhD in Microbiology from the University of Washington, Vice President of Scientific Communication at the American Council on Science and Health, Non-Resident Fellow at The Council on Strategic Risks, Speaker at The Insight Bureau, Former Adjunct Faculty Member at Northwest University, “The Environment: Getting Better All The Time”, American Council on Science and Health, 7/23/2019, https://www.acsh.org/news/2019/07/23/environment-getting-better-all-time-14176

In 1967, the Beatles released Sgt. Pepper's Lonely Hearts Club Band, one of the best albums ever made. One of its hit songs was titled "Getting Better," and part of the chorus goes like this:

I've got to admit it's getting better

A little better all the time

The song was about life in general, but it could have been dedicated to the environment. Contrary to what you see reported in the news, the environment is, bit by bit, getting better.

The Environment: Getting Better All the Time

The latest evidence for this comes from France, which is becoming heavily re-forested. According to The Economist:

Since 1990, thanks to better protection as well as to a decline in farming, France’s overall wooded or forested areas have increased by nearly 7%. And France is far from being alone. Across the EU, between 1990 and 2015, the total forested and wooded area grew by 90,000 square kilometres—an area roughly the size of Portugal. Almost every country has seen its forests grow over the period.

Believe it or not, Europe is not an outlier. The United States has more trees now than it did 100 years ago. A study in Nature concluded that there is more tree cover on Earth now than 35 years ago1.

Why? Because of technology and wealth. Technology, including agricultural technology, helps decouple the economy from natural resources. In other words, we humans are becoming less reliant on Mother Nature for our well-being. We can grow more food on less land, for instance. Soon, using hydroponics, we may be able to grow food in skyscrapers.

Wealth is the other major driver. When a poor country becomes wealthier, it usually does so at the expense of the environment. (That's why China is belching out pollution and Brazil is destroying the Amazon rain forest.) The primary concern of these countries is to escape poverty. But as countries become even richer, they decide to use some of that wealth to benefit the environment. Green spaces and parks are often seen as a luxury that only the wealthy can afford.

This concept is neither new nor a myth propagated by industry. It's known as the environmental Kuznets curve. (Source: Govinddelhi via Wikipedia.) A textbook co-authored by Paul Krugman (yes, that Paul Krugman) called International Economics: Theory and Policy said that the relevance of the environmental Kuznets curve "has been confirmed by a great deal of further research."2

None of this is meant to suggest that there are no environmental problems. Poor regions really are doing some very bad things to the planet. Asia and Africa, for example, are primarily responsible for dumping plastic into the ocean3.

As is often the case, the cure is wealth. If we want these countries to treat the planet well, we should do whatever we can to help make them richer. Incidentally, they'll also have fewer kids.

Notes

(1) Naysayers, pessimists, and Debbie Downers will note that biodiversity is lower in new forests than in old-growth forests. That's probably true but have patience. Biodiversity will return. The Demilitarized Zone (DMZ) between North and South Korea has become a haven for wildlife, including endangered species.

### Biod D---No Impact---2NC

#### Bio-d isn’t existential---AFF ev is small scale experiments, species substitute for each other and no impact even if you eliminated 50% of species—that’s Kareiva

#### No impact to biodiversity---rebound and resilience.

John Halstead 19, Ph.D. from the University of Oxford, researcher at Founders Pledge, citing Dr. Peter Kareiva, a Ph.D. in ecology and evolutionary biology at Cornell University and Director of UCLA’s Institute of the Environment and Sustainability, “Centre for the Study of Existential Risk Six Month Report: November 2018 - April 2019,” Centre for the Study of Existential Risk, April 2019, https://forum.effectivealtruism.org/posts/zbZxisJRJBCdtYvh9/centre-for-the-study-of-existential-risk-six-month-report

Can you explain what the mechanism is whereby biodiversity loss creates existential risk? And if biodiversity loss is an existential risk, how big a risk is it? Should 80k be getting people to go into conservation science or not?

There are independent reasons to think that the risk is negligible. Firstly, according to wikipedia, during the Eocene period ~65m years ago, there were thousands fewer genera than today. We have made ~1% of species extinct, and we would have to continue at current rates of species extinctions for at least 200 years to return to Eocene levels of biodiversity. And yet, even though significantly warmer than today, the Eocene marked the dawn of thousands of new species. So, why would we expect the world 200 years hence to be inhospitable to humans if it wasn't inhospitable for all of the species emerging in the Eocene, who are/were significantly less numerous than humans and significantly less capable of a rational response to problems?

Secondly, as far as I am aware, evidence for pressure-induced non-linear ecosystem shifts is very limited. This is true for a range of ecosystems. Linear ecosystem damage seems to be the norm. If so, this leaves more scope for learning about the costs of our damage to ecosystems and correcting any damage we have done.

Thirdly, ecosystem services are overwhelmingly a function of the relations within local ecosystems, rather than of global trends in biodiversity. Upon discovering Hawaii, the Polynesians eliminated so many species that global decadal extinction rates would have been exceptional. This has next to no bearing on ecosystem services outside Hawaii. Humanity is an intelligent species and will be able to see if other regions are suffering from biodiversity loss and make adjustments accordingly. Why would all regions be so stupid as to ignore lessons from elsewhere? Also, is biodiversity actually decreasing in the rich world? I know forest cover is increasing in many places. Population is set to decline in many rich countries in the near future, and environmental impact per person is declining on many metrics.

I also find it surprising that you cite the Kareiva and Carranza paper in support of your claims, for this paper in fact directly contradicts them:

"The interesting question is whether any of the planetary thresholds other than CO2 could also portend existential risks. Here the answer is not clear. One boundary often mentioned as a concern for the fate of global civilization is biodiversity (Ehrlich & Ehrlich, 2012), with the proposed safety threshold being a loss of greater than 0.001% per year (Rockström et al., 2009). There is little evidence that this particular 0.001% annual loss is a threshold—and it is hard to imagine any data that would allow one to identify where the threshold was (Brook, Ellis, Perring, Mackay, & Blomqvist, 2013; Lenton & Williams, 2013). A better question is whether one can imagine any scenario by which the loss of too many species leads to the collapse of societies and environmental disasters, even though one cannot know the absolute number of extinctions that would be required to create this dystopia.

While there are data that relate local reductions in species richness to altered ecosystem function, these results do not point to substantial existential risks. The data are small-scale experiments in which plant productivity, or nutrient retention is reduced as species numbers decline locally (Vellend, 2017), or are local observations of increased variability in fisheries yield when stock diversity is lost (Schindler et al., 2010). Those are not existential risks. To make the link even more tenuous, there is little evidence that biodiversity is even declining at local scales (Vellend et al., 2013, Vellend et al., 2017). Total planetary biodiversity may be in decline, but local and regional biodiversity is often staying the same because species from elsewhere replace local losses, albeit homogenizing the world in the process. Although the majority of conservation scientists are likely to flinch at this conclusion, there is growing skepticism regarding the strength of evidence linking trends in biodiversity loss to an existential risk for humans (Maier, 2012; Vellend, 2014). Obviously if all biodiversity disappeared civilization would end—but no one is forecasting the loss of all species. It seems plausible that the loss of 90% of the world’s species could also be apocalyptic, but not one is predicting that degree of biodiversity loss either. Tragic, but plausible is the possibility of our planet suffering a loss of as many as half of its species. If global biodiversity were halved, but at the same time locally the number of species stayed relatively stable, what would be the mechanism for an end-of-civilization or even end of human prosperity scenario? Extinctions and biodiversity loss are ethical and spiritual losses, but perhaps not an existential risk."

#### No collapse

Jeremy Hance 18, Wildlife Blogger for The Guardian and Journalist With Mongabay Focusing On Forests, Indigenous People, Climate Change and More, Author of Life is Good: Conservation in an Age of Mass Extinction, The Guardian, 1-16-2018, "Could Biodiversity Destruction Lead To A Global Tipping Point?", https://www.theguardian.com/environment/radical-conservation/2018/jan/16/biodiversity-extinction-tipping-point-planetary-boundary

“It makes no sense that there exists a tipping point of biodiversity loss beyond which the Earth will collapse,” said co-author and ecologist, José Montoya, with Paul Sabatier Univeristy in France. “There is no rationale for this.” Montoya wrote the paper along with Ian Donohue, an ecologist at Trinity College in Ireland and Stuart Pimm, one of the world’s leading experts on extinctions, with Duke University in the US. Montoya, Donohue and Pimm argue that there isn’t evidence of a point at which loss of species leads to ecosystem collapse, globally or even locally. If the planet didn’t collapse after the Permian-Triassic extinction event, it won’t collapse now – though our descendants may well curse us for the damage we’ve done. Instead, according to the researchers, every loss of species counts. But the damage is gradual and incremental, not a sudden plunge. Ecosystems, according to them, slowly degrade but never fail outright. “Of more than 600 experiments of biodiversity effects on various functions, none showed a collapse,” Montoya said. “In general, the loss of species has a detrimental effect on ecosystem functions...We progressively lose pollination services, water quality, plant biomass, and many other important functions as we lose species. But we never observe a critical level of biodiversity over which functions collapse.”

#### Adaptation solves.

Jeremey Hance 18, wildlife blogger and journalist focusing on forests, indigenous people and climate change, author of Life is Good: Conservation in an Age of Mass Extinction, “Could Biodiversity Destruction Lead to a Global Tipping Point?,” The Guardian, 1/26/18, https://www.theguardian.com/environment/radical-conservation/2018/jan/16/biodiversity-extinction-tipping-point-planetary-boundary

Just over 250 million years ago, the planet suffered what may be described as its greatest holocaust: ninety-six percent of marine genera (plural of genus) and seventy percent of land vertebrate vanished for good. Even insects suffered a mass extinction – the only time before or since. Entire classes of animals – like trilobites – went out like a match in the wind.

But what’s arguably most fascinating about this event – known as the Permian-Triassic extinction or more poetically, the Great Dying – is the fact that anything survived at all. Life, it seems, is so ridiculously adaptable that not only did thousands of species make it through whatever killed off nearly everything (no one knows for certain though theories abound) but, somehow, after millions of years life even recovered and went on to write new tales.

Even as the Permian-Triassic extinction event shows the fragility of life, it also proves its resilience in the long-term. The lessons of such mass extinctions – five to date and arguably a sixth happening as I write – inform science today. Given that extinction levels are currently 1,000 (some even say 10,000) times the background rate, researchers have long worried about our current destruction of biodiversity – and what that may mean for our future Earth and ourselves.

In 2009, a group of researchers identified nine global boundaries for the planet that if passed could theoretically push the Earth into an uninhabitable state for our species. These global boundaries include climate change, freshwater use, ocean acidification and, yes, biodiversity loss (among others). The group has since updated the terminology surrounding biodiversity, now calling it “biosphere integrity,” but that hasn’t spared it from critique.

A paper last year in Trends in Ecology & Evolution scathingly attacked the idea of any global biodiversity boundary.

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#### Ecosystems are resilient

Peter Kareiva 11, Chief Scientist and Vice President of the Nature Conservancy, Michelle Marvier, Professor in the Department of Environmental Studies and Sciences at Santa Clara University, Robert Lalasz, Director of Science Communications at The Nature Conservancy and Editor of Cool Green Science, “Conservation in the Anthropocene: Beyond Solitude and Fragility”, Breakthrough Journal, Number 2, Fall, http://thebreakthrough.org/index.php/journal/past-issues/issue-2/conservation-in-the-anthropocene/

But ecologists and conservationists have grossly overstated the fragility of nature, frequently arguing that once an ecosystem is altered, it is gone forever. Some ecologists suggest that if a single species is lost, a whole ecosystem will be in danger of collapse, and that if too much biodiversity is lost, spaceship Earth will start to come apart. Everything, from the expansion of agriculture to rainforest destruction to changing waterways, has been painted as a threat to the delicate inner-workings of our planetary ecosystem.

The fragility trope dates back, at least, to Rachel Carson, who wrote plaintively in Silent Spring of the delicate web of life and warned that perturbing the intricate balance of nature could have disastrous consequences.22 Al Gore made a similar argument in his 1992 book, Earth in the Balance.23 And the 2005 Millennium Ecosystem Assessment warned darkly that, while the expansion of agriculture and other forms of development have been overwhelmingly positive for the world's poor, ecosystem degradation was simultaneously putting systems in jeopardy of collapse.24

The trouble for conservation is that the data simply do not support the idea of a fragile nature at risk of collapse. Ecologists now know that the disappearance of one species does not necessarily lead to the extinction of any others, much less all others in the same ecosystem. In many circumstances, the demise of formerly abundant species can be inconsequential to ecosystem function. The American chestnut, once a dominant tree in eastern North America, has been extinguished by a foreign disease, yet the forest ecosystem is surprisingly unaffected. The passenger pigeon, once so abundant that its flocks darkened the sky, went extinct, along with countless other species from the Steller's sea cow to the dodo, with no catastrophic or even measurable effects.

These stories of resilience are not isolated examples -- a thorough review of the scientific literature identified 240 studies of ecosystems following major disturbances such as deforestation, mining, oil spills, and other types of pollution. The abundance of plant and animal species as well as other measures of ecosystem function recovered, at least partially, in 173 (72 percent) of these studies.25

While global forest cover is continuing to decline, it is rising in the Northern Hemisphere, where "nature" is returning to former agricultural lands.26 Something similar is likely to occur in the Southern Hemisphere, after poor countries achieve a similar level of economic development. A 2010 report concluded that rainforests that have grown back over abandoned agricultural land had 40 to 70 percent of the species of the original forests.27 Even Indonesian orangutans, which were widely thought to be able to survive only in pristine forests, have been found in surprising numbers in oil palm plantations and degraded lands.28

Nature is so resilient that it can recover rapidly from even the most powerful human disturbances. Around the Chernobyl nuclear facility, which melted down in 1986, wildlife is thriving, despite the high levels of radiation.29 In the Bikini Atoll, the site of multiple nuclear bomb tests, including the 1954 hydrogen bomb test that boiled the water in the area, the number of coral species has actually increased relative to before the explosions.30 More recently, the massive 2010 oil spill in the Gulf of Mexico was degraded and consumed by bacteria at a remarkably fast rate.31

#### Most species are useless and you can replace them with science.

**Sagoff 8** Mark, Senior Research Scholar @ Institute for Philosophy and Public Policy @ School of Public Policy @ U. Maryland, Environmental Values, “On the Economic Value of Ecosystem Services”, 17:2, 239-257, EBSCO

What about the economic value of biodiversity? Biodiversity represents nature's greatest largess or excess since species appear nearly as numerous as the stars the Drifters admired, except that "scientists have a better understanding of how many stars there are in the galaxy than how many species there arc on Earth."70 Worldwide the variety of biodiversity is effectively infinite; the myriad species of plants and animals, not to mention microbes that arc probably more important, apparently exceed our ability to count or identify them. The "next" or "incremental" thousand species taken at random would not fetch a market price because another thousand are immediately available, and another thousand after that. No one has suggested an economic application, moreover, for any of the thousand species listed as threatened in the United States.77 To defend these species - or the next thousand or the thousand after that - on economic grounds is to trade convincing spiritual, aesthetic, and ethical arguments for bogus, pretextual, and disingenuous economic ones.78 As David Ehrenfeld has written, We do not know how many [plant] species are needed lo keep the planet green and healthy, but it seems very unlikely to be anywhere near the more than quarter of a million we have now. Even a mighty dominant like the American chestnut, extending over half a continent, all but disappeared without bring¬ing the eastern deciduous forest down with it. And if we turn to the invertebrates, the source of nearly all biological diversity, what biologist is willing to find a value - conventional or ecological - for all 600,000-plus species of beetles?7\* The disappearance in the wild even of agriculturally useful species appears to have no effect on production. The last wild aurochs, the progenitor of dairy and beef cattle, went extinct in Poland in 1742, yet no one believes the beef industry is threatened. The genetic material of crop species is contained in tens of thousands of landraces and cultivars in use - rice is an example - and does not depend on the persistence of wild ancestral types. Genetic engineering can introduce DNA from virtually any species into virtually any other - which allows for the unlimited creation of biodiversity. A neighbor of mine has collected about 4,000 different species of insects on his two-acre property in Silver Spring, Maryland. These include 500 kinds of Lepidoptera (mostly moths) - half the number another entomologist found at his residence.80 When you factor in plants and animals, the amount of "backyard biodiversity" in suburbs is astounding and far greater than you can imagine.8' Biodiversity has no value "at the margin" because nature provides far more of it than anyone could possibly administer. If one kind of moth flies off, you can easily attract hundreds of others.

#### Can lose 99.9 of species.

Sagoff 97 (Mark, Senior Research Scholar @ Institute for Philosophy and Public policy in School of Public Affairs @ U. Maryland, William and Mary Law Review, “INSTITUTE OF BILL OF RIGHTS LAW SYMPOSIUM DEFINING TAKINGS: PRIVATE PROPERTY AND THE FUTURE OF GOVERNMENT REGULATION: MUDDLE OR MUDDLE THROUGH? TAKINGS JURISPRUDENCE MEETS THE ENDANGERED SPECIES ACT”, 38 Wm and Mary L. Rev. 825, March, L/N) Although one may agree with ecologists such as Ehrlich and Raven that the earth stands on the brink of an episode of massive extinction, it may not follow from this grim fact that human beings will suffer as a result. On the contrary, skeptics such as science writer Colin Tudge have challenged biologists to explain why we need more than a tenth of the 10 to 100 million species that grace the earth. Noting that "cultivated systems often out-produce wild systems by 100-fold or more," Tudge declared that "the argument that humans need the variety of other species is, when you think about it, a theological one." n343 Tudge observed that "the elimination of all but a tiny minority of our fellow creatures does not affect the material well-being of humans one iota." n344 This skeptic challenged ecologists to list more than 10,000 species (other than unthreatened microbes) that are essential to ecosystem productivity or functioning. n345 "The human species could survive just as well if 99.9% of our fellow creatures went extinct, provided only that we retained the appropriate 0.1% that we need." n346 [\*906] The monumental Global Biodiversity Assessment ("the Assessment") identified two positions with respect to redundancy of species. "At one extreme is the idea that each species is unique and important, such that its removal or loss will have demonstrable consequences to the functioning of the community or ecosystem." n347 The authors of the Assessment, a panel of eminent ecologists, endorsed this position, saying it is "unlikely that there is much, if any, ecological redundancy in communities over time scales of decades to centuries, the time period over which environmental policy should operate." n348 These eminent ecologists rejected the opposing view, "the notion that species overlap in function to a sufficient degree that removal or loss of a species will be compensated by others, with negligible overall consequences to the community or ecosystem." n349 Other biologists believe, however, that species are so fabulously redundant in the ecological functions they perform that the life-support systems and processes of the planet and ecological processes in general will function perfectly well with fewer of them, certainly fewer than the millions and millions we can expect to remain even if every threatened organism becomes extinct. n350 Even the kind of sparse and miserable world depicted in the movie Blade Runner could provide a "sustainable" context for the human economy as long as people forgot their aesthetic and moral commitment to the glory and beauty of the natural world. n351 The Assessment makes this point. "Although any ecosystem contains hundreds to thousands of species interacting among themselves and their physical environment, the emerging consensus is that the system is driven by a small number of . . . biotic variables on whose interactions the balance of species are, in a sense, carried along." n352 [\*907]

### BioD D---Environment Improving---2NC

#### Earth isn’t dying: the environment’s getting better. Doomsday is disproven by data: global reforestation and species protection are improving biodiversity and the EKC will accelerate this as tech and wealth increase---that’s Berezow

#### Almost every metric is improving

Gregg Easterbrook 18, Contributing Editor at The New Republic and The Atlantic, Former Fellow in Economics and Government Studies at The Brookings Institution, Lecturer at the Aspen Institute and Chautauqua Institution, It's Better Than It Looks: Reasons for Optimism in an Age of Fear, p. 52

INSTEAD, IN 2017, I WATCHED a bald eagle glide peacefully above my home near Washington, DC. North American eagles have proliferated so much that the International Union for the Conservation of Nature (IUCN), which keeps the books on species gains and losses, now classifies the bird under "least concern.”

The eagle flew through air that was free of smog, as air almost always is in American cities. Newspapers in my driveway reported that oversupply of petroleum and natural gas was pushing energy prices toward record lows. "Oil Glut Worries"—here, Wall Street Journal, March 10, 2017; "Natural Gas Glut Deepens," same paper, same page, a week later. Society was expected by now to be in full panic mode regarding oil and gas exhaustion, and instead the apprehension is too much fuel. Another newspaper in the driveway reported so many otters frolicking off California that tourists were crowding seaside enclaves to watch. Acid rain was nearly stopped, the stratospheric ozone hole was closing. Water quality alarms were ongoing in Flint, Michigan, and along Long Island Sound, but in general cleanliness was rising, with Boston Harbor, Chesapeake Bay, Puget Sound, and other major water bodies, filthy a generation ago, mostly safe for swimming and fishing, meeting the 1972 Clean Water Act's definition of success. Nearly every environmental barometer in the United States was positive and had been so for years if not decades.

Watching the bald eagle soar did not make me feel complacent regarding the natural world, rather, made me feel that greenhouse gases can be brought to heel, just as other environmental problems have been. Climate change reforms will be the subject of a coming chapter. Here, let's contemplate why nature did not collapse, despite ever more people consuming ever more resources.

Man-made damage to nature can be atrocious. Think of the Exxon Valdez oil spill, which destroyed forever the wildlife in Prince William Sound, Alaska. At least that's what was said in 1989 when the tanker struck Bligh Reef. Today most sea and intertidal life in Prince William Sound has returned to pre-spill numbers, while the sound's combination of beauty and biology makes it a popular destination for whale- watching tours. Exxon, now ExxonMobil, deserved the billions in fines and settlements the company paid. But the whole thing was over in a snap of the fingers in geologic terms.

Humanity is hardly the only force that damages nature. In 1980, pressurized magma inside Mount Saint Helens in Washington State exploded with the power of about 1,500 Hiroshima bombs. "Some 19 million old-growth Douglas firs, trees with deep roots, were ripped from the ground and tossed about like cocktail swizzles," one analyst wrote. Hundreds of square miles burned to cinders, animals and fifty- seven people near the eruption turned to char. Commentators of the time called the Mount Saint Helens area destroyed forever. When I hiked the blast zone in 1992, I was amazed to behold areas that had been lifeless moonscapes in 1980; just a dozen years later, they were bright with biology: wildflower, elk, sapling firs. Today Mount Saint Helens National Volcanic Monument is a recommended destination for backpackers. Through the eons, nature has healed after insults far worse than the worst ever done by people—ice ages, asteroid strikes, thousand-year periods of volcanism so extreme that global ash clouds blocked the sun for years at a time. The mega-volcanism that long ago created Siberia is estimated to have unleashed three billion times the force of the Hiroshima blast, plus far more smoke than humanity's wars and factories combined. Nature has evolved defenses against such harm in the same way that the body has evolved defenses against pathogens. This does not make harm to nature insignificant, any more than having an immune system makes germs insignificant. But before asking whether nature will collapse, it's good to remind ourselves that our ongoing existence is evidence that the biosphere is a green fortress.

#### Oceans, species, and renewables are all trending up

Elijah Wolfson 18, Science and Health Editor at Quartz, Former Senior Editor at Newsweek Magazine, “How The World Got Better In 2018, In 15 Charts”, Quartz, 12/24/2018, https://qz.com/1506764/ways-the-world-improved-in-2018-in-charts/

For example, in 2016, for the first time, the share of global energy that came from renewables passed 10%. According to the International Energy Agency, the world got nearly 25% of its electricity from renewables in 2017, and that number should jump to 30% within the next few years. (Note: Many of the figures cited in this story are from 2017 or 2016, but most were published in 2018 because it usually takes a year or two to gather and analyze global data.)

Chart, line chart

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New data also show that, between 2016 and 2017, some 6.7 million additional sq km (2.6 million sq miles) of the world’s oceans were put under environmental protection. The majority of that is in national waters, meaning more countries are actively assisting in the global ocean conservation project. (About 260,000 sq km of land were also added.)

Square

Description automatically generated with medium confidence

It’s a bit hard to contextualize how many endangered or threatened species we’ve been able to save, since their ranks grow as as humans explore more of the world and find new species we must assess. But the fact that we’ve been able to take an increasing number off these lists is encouraging. In 2018, the lesser long-nosed bat was delisted thanks largely to the efforts of tequila producers, whose agave plants the bats feed on.

Chart, line chart

Description automatically generated

#### Their ev is pessimism bias

Dylan Matthews 18, Senior Correspondent at Vox, “23 Charts And Maps That Show The World Is Getting Much, Much Better”, Vox, 10/17/2018, https://www.vox.com/2014/11/24/7272929/global-poverty-health-crime-literacy-good-news

This is all real, and truly alarming. But it would be a mistake to view that as the sum total of the world in 2018. Under the radar, some aspects of life on Earth are getting dramatically better. Extreme poverty has fallen by half since 1990, and life expectancy is increasing in poor countries — and there are many more indices of improvement like that everywhere you turn.

But many of us aren’t aware of ways the world is getting better because the press — and humans in general — have a strong negativity bias. Bad economic news gets more coverage than good news. Negative experiences affect people more, and for longer, than positive ones. Survey evidence consistently indicates that few people in rich countries have any clue that the world has taken a happier turn in recent decades — one poll in 2016 found that only 8 percent of US residents knew that global poverty had fallen since 1996.

### BioD D---AT: Food Impact

#### Biod loss won’t hurt food production.

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We have a lot of legitimate regional problems that can threaten the regional food supply. Unfortunately, these regional problems are often blown out of proportion globally. These regional threats include problems such as loss of fisheries, species extinction, loss of bees, loss of unsustainable irrigation, loss of artificial pesticides and fertilizers, loss of topsoil, salinization (turning salty) of soil, desertification, loss of stratospheric ozone, water pollution, and other resource exhaustion issues. These are less serious because of a smaller and/or slower impact on global food production. For example, losing all the fish in the ocean would be a tragedy and sounds really scary. Yet from a human food perspective, it would not be that big a problem. Global fisheries make up less than 3% of human calories; therefore, even if they all collapsed it would not be a global food catastrophe. Biodiversity supplies ecosystem services to agriculture such as pollination, pest control, soil fertility, and climate stability (Ehrlich and Ehrlich, 2013). This is important and valuable for humanity, but there are also well-known alternatives and interventions available to us, and therefore, there does not appear to be a credible route to agricultural supply collapse. That said, loss of wild species is important for the species’ intrinsic value and we do not mean to diminish that value by ignoring it. We remind the reader that here we are only concerned with preventing global food catastrophes.

### BioD D---AT: Keystone Species

#### Keystone species are always misdiagnosed

Bob Berwyn 6, freelance journalist, 4-11-2006, "‘Balance of nature’ as a myth," Summit Daily, https://www.summitdaily.com/news/balance-of-nature-as-a-myth/

The core assumption that there’s a “balance of nature” at stake in the raging endangered species debates is a myth, Randy T. Simmons said Monday, tackling the thorny subject of biodiversity and conservation during the State of the Rockies conference at Colorado College.”Nature is chaos and change,” said Simmons, director of the Institute of Political Economy at Utah State University. “Disturbance and change are the only constants in nature.”As a result of the underlying mythology, expenditures on species conservation have been misdirected, misguided and downright “stupid,” Simmons said, challenging citizens of the Rocky Mountain region to look beyond the conventional wisdom of species conservation. Simmons, who also has worked as a policy analyst for the U.S. Department of Interior, said the government has spread its money around instead of focusing on species that really matter to ecosystem function.It’s a crucial question in Summit County, where land use decisions are sometimes made based on effects to species like Canada lynx and the boreal toad, neither of which are keystone species with known significant effects on the broader ecosystem. In other words, the absence of lynx and toads in their native habitat don’t necessarily mean the ecosystem is near catastrophic collapse.To bolster his arguments, Simmons delved back into the natural history of North America during pre-European settlement times. He said some of the best research on the topic indicates that Native American hunting and fire-making had a far greater impact on the landscape and natural resources than is generally acknowledged.The assumption of a pre-European Garden of Eden may be false, and if it is, then policies and management based on them are unlikely to create conditions that protect species and “may even create harmful conditions,” Simmons said.

### BioD D---AT: Mass Extinction

#### Biod is fine – species recover

Stewart Brand 15, president of the Long Now Foundation and co-founder of the Revive and Restore project, 4-21-2015, "We are not edging up to a mass extinction – Stewart Brand," Aeon, https://aeon.co/essays/we-are-not-edging-up-to-a-mass-extinction

Many now assume that we are in the midst of a human-caused ‘Sixth Mass Extinction’ to rival the one that killed off the dinosaurs 66 million years ago. But we’re not. The five historic mass extinctions eliminated 70 per cent or more of all species in a relatively short time. That is not going on now. ‘If all currently threatened species were to go extinct in a few centuries and that rate continued,’ began a recent Nature magazine introduction to a survey of wildlife losses, ‘the sixth mass extinction could come in a couple of centuries or a few millennia.’The range of dates in that statement reflects profound uncertainty about the current rate of extinction. Estimates vary a hundred-fold – from 0.01 per cent to 1 per cent of species being lost per decade. The phrase ‘all currently threatened species’ comes from the indispensable IUCN (International Union for Conservation of Nature), which maintains the Red List of endangered species. Its most recent report shows that of the 1.5 million identified species, and 76,199 studied by IUCN scientists, some 23,214 are deemed threatened with extinction. So, if all of those went extinct in the next few centuries, and the rate of extinction that killed them kept right on for hundreds or thousands of years more, then we might be at the beginning of a human-caused Sixth Mass Extinction. An all-too-standard case of extinction mislabeling occurred this January on the front page of The New York Times Magazine. ‘Ocean Life Faces Mass Extinction, Broad Study Shows,’ read the headline. But the article by Carl Zimmer described no such thing. Instead it was a relatively good-news piece pointing out that while much of sea life is in trouble, it is far less so than continental wildlife, and there is time to avoid the mistakes made on land. The article noted that, in the centuries since 1500, some 514 species have gone extinct on land but only 15 in the oceans, and none at all in the past 50 years. The Science paper on which Zimmer was reporting was titled ‘Marine Defaunation: Animal Loss in the Global Ocean’ by Douglas McCauley, an ecologist at the University of California, Santa Barbara, and colleagues. It stated: ‘Though humans have caused few global marine extinctions, we have profoundly affected marine wildlife, altering the functioning and provisioning of services in every ocean,’ and it went on to chronicle the causes of ‘the proliferation of ‘empty reefs’, ‘empty estuaries’, and ‘empty bays’, with an overall decline of marine fishes by 38 per cent. Extinction is not a helpful way to think about threats to ocean animals because few go extinct there. The animals are highly mobile in a totally connected vast environment where there is almost always somewhere to hide, even from industrial-scale hunting. Atlantic cod used to be one of the world’s great fisheries before it collapsed in 1992 from decades of overfishing. According to Jesse Ausubel, one of the organisers of the recent international Census of Marine Life: ‘The total estimated kilos of cod off Cape Cod today probably weigh only about 3 per cent of all the cod in 1815.’ (Across the Atlantic in the North Sea, however, cod fishery is recovering, thanks to effective regulation.) No one really expects cod to go extinct, and yet the Red List describes them as threatened with extinction. The best summation I have seen of the current situation comes from John C Briggs, biogeographer at the University of South Florida, in a letter to Science magazine last November: Most extinctions have occurred on oceanic islands or in restricted freshwater locations, with very few occurring on Earth’s continents or in the oceans. The world’s greatest conservation problem is not species extinction, but rather the precarious state of thousands of populations that are the remnants of once widespread and productive species. Briggs’s point about oceanic islands is worth examining in detail. Compared with continents, the ecosystems of remote islands are so simple and restricted, a great deal of what we understand about ecology and evolution has come from studying them. (Australia is considered such an island despite its size, thanks to its long isolation.) Darwin’s revelation about the origins of speciation was inspired by his travels to Pacific islands such as the Galapagos. One of the core texts of ecology and conservation biology is The Theory of Island Biogeography (1967) by Edward O Wilson and Robert MacArthur. Many new species readily emerge on ocean islands because of the isolation, but there are few other species to co-evolve with and thus they have no defence against invasive competitors and predators. The threat can be total. An endemic species under attack has nowhere to escape to. The island conservationist Josh Donlan estimates that islands, which are just 3 per cent of the Earth’s surface, have been the site of 95 per cent of all bird extinctions since 1600, 90 per cent of reptile extinctions, and 60 per cent of mammal extinctions. Those are horrifying numbers, but the losses are extremely local. They have no effect on the biodiversity and ecological health of the continents and oceans that make up 97 per cent of the Earth. The frightening extinction statistics that we hear are largely an island story, and largely a story of the past, because most island species that were especially vulnerable to extinction are already gone. The island ecosystems have not collapsed in their absence. Life becomes different, and it carries on. Since the majority of invasive species are relatively benign, they add to an island’s overall biodiversity. The ecologist Dov Sax at Brown University in Rhode Island points out that non-native plants have doubled the botanical biodiversity of New Zealand – there are 2,104 native plants in the wild, and 2,065 non-native plants. Ascension Island in the south Atlantic, once a barren rock deplored by Charles Darwin for its ‘naked hideousness’, now has a fully functioning cloud forest made entirely of plants and animals brought by humans in the past 200 years. (The Ascension Island story opens a new book by environmental journalist Fred Pearce, titled The New Wild: Why Invasive Species Will Be Nature’s Salvation.)

### Biod D---AT: K of CBA

#### Cost benefits analysis is inevitable in environmental policy. Refusing it creates ineffective ecological law.

Michael A. Livermore & Mauricio Guim 21, Mauricio Guim is a professor of law at ITAM; Michael A Livermore is a Professor of Law, University of Virginia School of Law, "Where Nature's Rights Go Wrong." Virginia Law Review, vol. 107, no. 7, November 2021, pp. 1347-1420. HeinOnline

In this Article, we provide a dose of skepticism.5 A defining feature of environmental policy is that it touches on complex, interconnected systems. As a consequence, environmental policy tends to have effects across a large number of (at least arguably) morally relevant dimensions. Outcomes that are affected by environmental policies include many features of human health and well-being, biodiversity and extinction, the protection of wilderness, and the stability of ecosystems. The natural world is not a monolithic "it," but a "they" in the broadest possible understanding of that term.6 This basic, pragmatic reality means that the process of environmental policymaking often requires that comparisons be made across alternatives that have both positive and negative effects on human beings and the non-human world.

A common example of an environmental policy choice that governments have faced many times is whether or not to grant a permit for a hydroelectric dam. Granting a permit may further economic development for some while destroying the property of others; the dam may reduce carbon dioxide emissions by displacing fossil fuel electricity generation, but its construction may also wipe out the habitat of an endangered species. If the concept of nature's rights is not to be entirely paralyzing, it must admit of some way for these heterogeneous effects to be balanced against each other to decide whether, all things considered, it is better to grant the permit or not.

This balancing analysis requires that the various entities that are affected by a policy be defined and that the effects of the policy on these entities be compared. Each of these steps raises difficulties for a nature's rights framework. At the definitional step, the entities in question will frequently be aggregates, such as ecosystems or species. 8 There may be multiple ways of drawing lines around these aggregates, and estimates of the net consequences of a policy may be sensitive to these definitions. If there is no principled way to decide how to define the relevant entities, the decision of whether a policy is, on balance, desirable will be contingent on arbitrary line-drawing choices.

Even if the entities could be defined in a satisfactory fashion, making comparisons across entities raises additional challenges. Policy analyses limited just to effects on humans raise the classic problem of interpersonal comparisons. Solutions to this problem are generally grounded in the mutual intelligibility of people's motivations, interests, and reasons. A shared and comprehensible intersubjectivity that allows for deliberation and bargaining undergirds notions such as the social welfare function and the social contract, which are the dominant approaches for evaluating public policy choices. An equivalent shared understanding with entities like species, ecosystems, and landscapes is missing, leaving no clear foundation for an analytic structure capable of rendering effects across these entities comparable.

This problem can be restated as one arising from multi-dimensionality. In standard forms of environmental policy analysis, the heterogeneous effects associated with a government decision are reduced to a single dimension along which comparisons can be made.' 0 As practiced in the United States, that dimension is often a monetary metric based on the affected parties' willingness to pay." If non-human entities have their own intrinsic value, above and apart from the value assigned to them by people, then effects on those entities must also be measured along a common dimension to make them comparable. But none of the tools or concepts that are used to translate effects on people to a single dimension can readily be applied to all of the relevant non-human entities. This leaves policymakers with a highly multi-dimensional space where policy comparisons will often be indeterminate. Unless there is some sensible way to reduce the dimensionality used to describe outcomes, then it will often be unclear whether a policy infringes on, promotes, or is neutral with respect to the interests that undergird nature's rights.

### Resources D---1NC

#### Resource wars are fake

Emily Meierding 16, assistant professor at the Naval Postgraduate School in Monterey, Calif., 5-19-2016, "Oil wars: Why nations aren’t battling over resources," Washington Post, https://www.washingtonpost.com/news/monkey-cage/wp/2016/05/19/oil-wars-why-nations-arent-battling-over-petroleum-resources/?utm\_term=.b334c10dbcbd

The confrontation died down, but a critical question remains: Do countries fight over oil resources? The question isn’t just pertinent to the South China Sea. The Arctic, Caspian, East China Sea and eastern Mediterranean have all been identified as potential “hot spots” for international oil conflicts. Numerous conflicts, including Iraq’s invasion of Kuwait, Japan’s invasion of the Dutch East Indies in World War II, Germany’s attacks against the Russian Caucasus in the same war, the Iran-Iraq War, the Chaco War between Bolivia and Paraguay, and even the Falklands War, have been described as international “oil wars.” However, contrary to the conventional wisdom, the risk of international oil wars is slim. Although oil is an exceptionally valuable strategic and economic resource, fighting for it does not pay. The belief that countries fight for oil rests on a flawed foundational assumption: Countries reap the same benefits from foreign oil resources as from domestic oil resources. In reality, profiting from oil wars is hard. Countries face at least four sets of obstacles that discourage them from fighting for oil: invasion costs, occupation costs, international costs and investment costs. Invasion costs are the damage that wars inflict on oil fields and infrastructure. Occupation costs arise from local resistance to foreign occupation, which can target oil industry infrastructure and personnel. International costs are imposed by the international community, which can respond to oil grabs with economic sanctions and military interventions. Investment costs are the challenges of attracting foreign capital and technical expertise to occupied oil fields. Collectively, these four sets of costs dramatically reduce the payoffs of fighting for oil and the appeal of oil wars. When the many other costs of war, including manpower and materiel, are taken into account, fighting for oil becomes even less attractive. From a purely rational standpoint, countries shouldn’t launch oil wars. But, countries don’t always act rationally. To test the oil war hypothesis, we have to take another look at historical so-called oil wars. Closer examination shows that oil has not been the fundamental cause of any international wars. The Falklands War in 1982 was triggered by national pride and Argentine officials’ fear that their window of opportunity for retaking the islands was closing. Rather than fight over oil, Britain and Argentina tried to use it as a catalyst for cooperation. In the 1970s and 1990s, they tried to jointly develop the Falklands’ oil resources. The Iran-Iraq War, from 1980 to 1988, was also not an oil war. Iraq initially aimed only to gain control over the Shatt al-Arab waterway and 130 square miles of contested territory. In the early stages of the war, Iraq repeatedly offered to withdraw from Iran, if Tehran would accept those demands. However, Iranian officials accused the Iraqis of fighting for oil in order to discredit them internationally. The Chaco War, from 1932 to 1935, was also launched for other reasons. Bolivia and Paraguay knew that oil discoveries in the Chaco region were unlikely. They fought because of national pride and to avoid further territorial dismemberment, after major losses in the 19th century. The oil explanation didn’t appear until the war bogged down, when leaders tried to transfer responsibility for the devastating conflict onto international oil companies. On three occasions, countries have launched major military campaigns targeting oil resources. However, these were fundamentally wars for survival, not for oil. In World War II, Japan invaded the Dutch East Indies and Germany attacked the Russian Caucasus because leaders realized that, without more oil, their regimes would collapse. Japan would have to withdraw from China, which was “tantamount to telling us to commit suicide,” as Japanese Foreign Minister Togo Shigenori put it. Hitler was even more succinct: “Unless we get the Baku oil,” he stated, “the war is lost.” Iraq’s invasion of Kuwait in 1990 was a war for survival. Contrary to popular beliefs, Saddam Hussein was not attempting to greedily grab more oil resources. Instead, he was afraid that the United States was trying to overthrow his regime. The United States had supported the Kurds’ rebellion in the 1970s, perpetrated the Iran-Contra scandal in the 1980s, and by 1990, seemed to be squeezing Iraq economically. According to Hussein, the United States was driving down oil prices by directing Kuwait to exceed its OPEC production quota. Hussein believed that seizing Kuwait offered the only means of eluding the United States’ hostile designs. By controlling his neighbor, Hussein could raise oil prices, escape his economic crisis and regain domestic support. He knew that the maneuver was a long shot. Regime records show that Hussein expected the United States would try to force him out of Kuwait. Still, it was either that or regime collapse. As Hussein’s deputy, Tariq Aziz, said after the war, “You will either be hit inside your house and destroyed, economically and militarily. Or you go outside and attack…” Japanese, German and Iraqi leaders believed that they were fighting wars for survival. Participants in other so-called oil wars were fighting for additional reasons, like national pride. None of the conflicts were driven by oil ambitions. This is good news for contemporary international relations. Oil competition in areas like the South China Sea is not a serious threat to international security. Countries may engage in minor oil spats, like China and Vietnam’s rig confrontation, to reinforce their resource claims. However, these incidents will not escalate into international wars. There is also little risk of oil imperialism. Countries like China will not satisfy their oil needs by seizing foreign oil fields. Historically, leaders have only initiated oil grabs when they believed that their survival depended on it. This condition is exceedingly rare, even in wartime. And, it’s unrelated to the price of oil. The United States considered grabbing Middle Eastern oil in 1975, after the first energy crisis drove up prices. However, the Ford administration refrained, because the costs of aggression were too high. Lastly, oil won’t inspire great power wars. The United States and China may eventually come to blows. Some of their military campaigns may target oil resources, if controlling them seems necessary for regime survival. However, oil will not be the fundamental cause of a Sino-American conflict. It’s not worth fighting for.

### Resources D---2NC

#### Countries cooperate, not fight---studies prove.

Agha Bayramov 18. PhD Candidate and Lecturer at the Department of International Relations and International Organization of the University of Groningen. “Review: Dubious Nexus Between Natural Resources and Conflict.” Journal of Eurasian Studies 9(1): 72-81

The arguments of scarcity adherents have been challenged by a number of scholars in terms of qualitative and quantitative findings. According to Stern (2016) the assumptions underpinning the scarcity notion are illogical due to the exaggeration of threats arising from oil ownership from misperceptions of market information. Furthermore, Koubi et al. (2013) explain that despite their strong empirical explanations, scarcity scholars have weak quantitative research results ones that fail to prove the link between resource scarcity and intrastate or interstate conflict. The reason for this is that some large-N findings contradict early results, which illustrate that the scarcity-conflict nexus is more complicated than scarcity scholars would have us believe. Dinar (2011), meanwhile, argues that natural resource scarcity may in fact be an important force for cooperation between states. However, scholars of natural resource scarcity have hitherto ignored the ways in which scarcity can spur cooperation (Deudney, 1999).

Considering these findings, three conclusions can be drawn from this section. First, scarcity is a complex term and it should not be equated with only natural resources. As it is explained by Kester (2016) some countries may suffer from scarcity of technical, knowledge and human capacity rather than natural resources. In light of this, without a proper capacity it is also possible to have scarcity within abundancy of resources. While supporting the scarcity argument, Andrews-Speed (2015) offer an alternative explanation that natural resources are not physically scarce but there are indeed economic, political, environmental and equity barriers that can lead to a scarcity of natural resources. Due to the strong rule of law, decent neighbourly relations and existence of strong norms for compromise and of multilateral institutions, the North Atlantic countries are highly unlikely to utilize force against or declare war to each other. However, these dimensions and buffers are currently lacking in the Middle East, Africa and Asia. As such, the U.S and Europe should work closely with these regions to prevent any resource disputes erupting (Andrews-Speed 15). Similarly, Gleditsch (1998) explains that some highly developed countries have population density, clean water, and land degradation problems but they still do not suffer from environmental violence. Thus the main issue might be that poor economic development, rather than environmental scarcity, leads to conflict. Kester (2016) names this situation as “second-order-scarcity” which refers to a lack of technology, economic capacity, and knowledge to stop resource scarcity. In this regard, it may be scarcity, itself, rather than natural resources that leads to conflict.

Second, conflict can be defined differently based on different dimensions. However, the common consensus is that conflict consists of multiple dimensions (political, economic, environmental, historical, cultural, and geographical etc.) rather than single factor. In this regard, scarcity of natural resources is not strong enough, by itself, to induce either interstate or intrastate conflict. It needs in fact to interact with other variables. Finally, related to the previous reasons, scarcity of natural resources might be a contributing or marginal reason for rather than the root cause of a given conflict. In other words, it needs to interact with non-resource factors in order to cause violence.

#### No correlation.

Atkins, 16 – PhD Candidate in Energy, Environment & Resilience at the University of Bristol (Ed, “Environmental Conflict: A Misnomer?,” <http://www.e-ir.info/2016/05/12/environmental-conflict-a-misnomer/>)

The economic and strategic importance of oil and other non-renewable resource is indisputable. Yet the globalised character of international commerce has resulted in many nations ceasing to perceive resource dependency as a threat to autonomy or survival (Deudney, 1990). This interdependence has resulted in the decreased likelihood of inter-state conflict over control of resources, due to the price shocks these actions could propel across the system and the increasingly technological developments (Lipschutz and Holdren, 1990). Such dynamics are well illustrated by the 1973 oil crisis (Dabelko and Dabelko, 1993). Although the move by the Organisation of Arab Petroleum Exporting Countries (OAPEC) to restrict exports resulted in record price rises and the transformation of the international sphere, thus illustrating the economic relevance of resources, it did not result in international violent conflict. Furthermore, Le Billon (2001) has stated that the spectre of resource scarcity has resulted in the escalation of socioeconomic innovation and economic diversification – with the market mechanisms of contemporary capitalism creating an important impediment to conflict. In Botswana and Norway, minerals and oil, respectively, have been mobilised to ensure peaceful development rather than violent confrontation (Le Billon, 2001). Furthermore, in many cases potential scarcity has resulted in increased inter-state cooperation due to the shared interest in continued supply. The continued sanctity of the 1960 Indus Waters Treaty, between Pakistan and India, is an important example, with the spirit of cooperation over water resources enduring despite increased political tensions between the two nations (Wolf, 1998).

#### No resource wars

Bruno Tetrais 12, Senior Research Fellow at the Fondation pour la Recherche Stratgique, former Director, Civilian Affairs Committee, NATO Assembly, “The Demise of Ares,” 2012, csis.org/files/publication/twq12SummerTertrais.pdf

The Unconvincing Case for ‘‘New Wars’’ ¶ Is the demise of war reversible? In recent years, the metaphor of a new ‘‘Dark Age’’ or ‘‘Middle Ages’’ has flourished. 57 The rise of political Islam, Western policies in the Middle East, the fast development of emerging countries, population growth, and climate change have led to fears of ‘‘civilization,’’ ‘‘resource,’’ and ‘‘environmental’’ wars. We have heard the New Middle Age theme before. In 1973, Italian writer Roberto Vacca famously suggested that mankind was about to enter an era of famine, nuclear war, and civilizational collapse. U.S. economist Robert Heilbroner made the same suggestion one year later. And in 1977, the great Australian political scientist Hedley Bull also heralded such an age. 58 But the case for ‘‘new wars’’ remains as flimsy as it was in the 1970s.¶ Admittedly, there is a stronger role of religion in civil conflicts. The proportion of internal wars with a religious dimension was about 25 percent between 1940 and 1960, but 43 percent in the first years of the 21st century. 59 This may be an effect of the demise of traditional territorial conflict, but as seen above, this has not increased the number or frequency of wars at the global level. Over the past decade, neither Western governments nor Arab/Muslim countries have fallen into the trap of the clash of civilizations into which Osama bin Laden wanted to plunge them. And ‘‘ancestral hatreds’’ are a reductionist and unsatisfactory approach to explaining collective violence. Professor Yahya Sadowski concluded his analysis of post-Cold War crises and wars, The Myth of Global Chaos, by stating, ‘‘most of the conflicts around the world are not rooted in thousands of years of history --- they are new and can be concluded as quickly as they started.’’ 60¶ Future resource wars are unlikely. There are fewer and fewer conquest wars. Between the Westphalia peace and the end of World War II, nearly half of conflicts were fought over territory. Since the end of the Cold War, it has been less than 30 percent. 61 The invasion of Kuwaita nationwide bank robberymay go down in history as being the last great resource war. The U.S.-led intervention of 1991 was partly driven by the need to maintain the free flow of oil, but not by the temptation to capture it. (Nor was the 2003 war against Iraq motivated by oil.) As for the current tensions between the two Sudans over oil, they are the remnants of a civil war and an offshoot of a botched secession process, not a desire to control new resources.¶ China’s and India’s energy needs are sometimes seen with apprehension: in light of growing oil and gas scarcity, is there not a risk of military clashes over the control of such resources? This seemingly consensual idea rests on two fallacies. One is that there is such a thing as oil and gas scarcity, a notion challenged by many energy experts. 62 As prices rise, previously untapped reserves and non-conventional hydrocarbons become economically attractive. The other is that spilling blood is a rational way to access resources. As shown by the work of historians and political scientists such as Quincy Wright, the economic rationale for war has always been overstated. And because of globalization, it has become cheaper to buy than to steal. We no longer live in the world of 1941, when fear of lacking oil and raw materials was a key motivation for Japan’s decision to go to war. In an era of liberalizing trade, many natural resources are fungible goods. (Here, Beijing behaves as any other actor: 90 percent of the oil its companies produce outside of China goes to the global market, not to the domestic one.) 63 There may be clashes or conflicts in regions in maritime resource-rich areas such as the South China and East China seas or the Mediterranean, but they will be driven by nationalist passions, not the desperate hunger for hydrocarbons.

### Warming D---1NC

#### Warming won’t be catastrophic

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CLIMATE TRENDS

Beyond exhibiting extreme overconfidence in a cherry-picked analysis of climate-change causes, politicians and activists frequently ground their alarmism in frightening predictions about consequences that are likewise far from certain. This is not only true within the very new (and still quite unreliable) field of predictive climate science; it is true even in the context of ongoing climate phenomena. Indeed, politicians and journalists frequently characterize dramatic or unusual climate phenomena as the product of anthropogenic climate change, yet there is little evidence to support those claims.

For one thing, there is no observable upward trend in the number of “hot” days between 1895 and 2017; 11 of the 12 years with the highest number of such days occurred before 1960. Since 2005, NOAA has maintained the U.S. Climate Reference Network, comprising 114 meticulously maintained temperature stations spaced more or less uniformly across the lower 48 states, along with 21 stations in Alaska and two stations in Hawaii. They are placed to avoid heat-island effects and other such distortions as much as possible. The reported data show no increase in average temperatures over the available 2005-2020 period. In addition, a recent reconstruction of global temperatures over the past 1 million years — created using data from ice-sheet formations — shows that there is nothing unusual about the current warm period.

Rising sea levels are another frequently cited example of impending climate crisis. And yet sea levels have been rising since at least the mid-19th century. This rise is tied closely with the end of the Little Ice Age that occurred not long before, which led to a rise in global temperatures, some melting of sea ice, and a thermal expansion of sea water. There is some evidence showing an acceleration in sea-level rise beginning in the early 1990s: Satellite measurements of sea levels began in 1992 and show a sea-level rise of about 3.2 millimeters per year between 1993 and 2010. Before 1992, when sea levels were measured with tidal gauges, the data showed an increase of about 1.7 millimeters per year on average from 1901 to 1990.

But because the datasets are from two different sources — satellite measurements versus tidal gauges — they are not directly comparable, and therefore they cannot be interpreted as showing an acceleration in sea-level rises. Moreover, the period beginning in 1993 is short in terms of global climate phenomena. Since sea levels have risen at a constant rate, remained constant, or even fallen during similar relatively short periods, inferences drawn from them are problematic. It is of course possible there has been an acceleration in sea-level rise, but even still, it would not be clear whether such a development stemmed primarily from anthropogenic or natural causes; clearly, both processes are relevant.

A study of changes in Arctic and Antarctic sea ice yields very different inferences. Since 1979, Arctic sea ice has declined relative to the 30-year average (again, the degree to which this is the result of anthropogenic factors is not known). Meanwhile, Antarctic sea ice has been growing relative to the 30-year average, and the global sea-ice total has remained roughly constant since 1979.

Extreme weather occurrences are likewise used as evidence of an ongoing climate crisis, but again, a study of the available data undercuts that assessment. U.S. tornado activity shows either no increase or a downward trend since 1954. Data on tropical storms, hurricanes, and accumulated cyclone energy (a wind-speed index measuring the overall strength of a given hurricane season) reveal little change since satellite measurements of the phenomena began in the early 1970s. The number of wildfires in the United States shows no upward trend since 1985, and global acreage burned has declined over past decades. The Palmer Drought Severity Index shows no trend since 1895. And the IPCC’s Fifth Assessment Report, published in 2014, displays substantial divergence between its discussion of the historical evidence on droughts and the projections on future droughts yielded by its climate models. Simply put, the available data do not support the ubiquitous assertions about the causal link between greenhouse-gas accumulation, temperature change, and extreme weather events and conditions.

Unable to demonstrate that observed climate trends are due to anthropogenic climate change — or even that these events are particularly unusual or concerning — climate catastrophists will often turn to dire predictions about prospective climate phenomena. The problem with such predictions is that they are almost always generated by climate models driven by highly complex sets of assumptions about which there is significant dispute. Worse, these models are notorious for failing to accurately predict already documented changes in climate. As climatologist Patrick Michaels of the Competitive Enterprise Institute notes:

During all periods from 10 years (2006-2015) to 65 (1951-2015) years in length, the observed temperature trend lies in the lower half of the collection of climate model simulations, and for several periods it lies very close (or even below) the 2.5th percentile of all the model runs. Over shorter periods, such as the last two decades, a plethora of mechanisms have been put forth to explain the observed/modeled divergence, but none do so completely and many of the explanations are inconsistent with each other.

Similarly, climatologist John Christy of the University of Alabama in Huntsville observes that almost all of the 102 climate models incorporated into the Coupled Model Intercomparison Project (CMIP) — a tracking effort conducted by the Lawrence Livermore National Laboratory — overstate past and current temperature trends by a factor of two to three, and at times even more. It seems axiomatic to say we should not rely on climate models that are unable to predict the past or the present to make predictions about the distant future.

The overall temperature trend is not the only parameter the models predict poorly. As an example, every CMIP climate model predicts that increases in atmospheric concentrations of greenhouse gas should create an enhanced heating effect in the mid-troposphere over the tropics — that is, at an altitude over the tropics of about 30,000-40,000 feet. The underlying climatology is simple: Most of the tropics is ocean, and as increases in greenhouse-gas concentrations warm the Earth slightly, there should be an increase in the evaporation of ocean water in this region. When the water vapor rises into the mid-troposphere, it condenses, releasing heat. And yet the satellites cannot find this heating effect — a reality suggesting that our understanding of climate and atmospheric phenomena is not as robust as many seem to assume.

The poor predictive record of mainstream climate models is exacerbated by the tendency of the IPCC and U.S. government agencies to assume highly unrealistic future increases in greenhouse-gas concentrations. The IPCC’s 2014 Fifth Assessment Report, for example, uses four alternative “representative concentration pathways” to outline scenarios of increased greenhouse-gas concentrations yielding anthropogenic warming. These scenarios are known as RCP2.6, RCP4.5, RCP6, and RCP8.5. Since 1950, the average annual increase in greenhouse-gas concentrations has been about 1.6 parts per million. The average annual increase from 1985 to 2019 was about 1.9 parts per million, and from 2000 to 2019, it was about 2.2 parts per million. The largest increase that occurred was about 3.4 parts per million in 2016. But the assumed average annual increases in greenhouse-gas concentrations through 2100 under the four RCPs are 1.1, 3.0, 5.5, and an astounding 11.9 parts per million, respectively.

The studies generating the most alarmist predictions are the IPCC’s Special Report on Global Warming of 1.5°C and the U.S. government’s Fourth National Climate Assessment, both of which were published in 2018. Both assume RCP8.5 as the scenario most relevant for policy planning. The average annual greenhouse-gas increase under RCP8.5 is over five times the annual average for 2000-2019 and almost four times the single biggest increase on record. Climatologist Judith Curry, formerly of the Georgia Institute of Technology, describes such a scenario as “borderline impossible.”

RCP6 is certainly more realistic. It predicts a temperature increase of 3 degrees Celsius by 2100 in the average of the CMIP models. But on average, those CMIP models overstate the documented temperature record by a factor of at least two. Ultimately, models with a poor record of successfully accounting for past data and highly unrealistic future greenhouse-gas concentrations should not be considered a reasonable basis for future policy formulation.

### Warming D---2NC

#### No climate impact---bad studies and adaption.

Nils P. Gleditsch 21, Research Professor at the Peace Research Institute Oslo, “This time is different! Or is it? NeoMalthusians and environmental optimists in the age of climate change,” Journal of Peace Research, pg. 5-6, 2021, SAGE. clarification denoted with brackets.

The most extreme contrarian position is, of course, to deny one or both key conclusions of the IPCC: the reality of global warming or the human contribution to it. However, most environmental optimists accept these two key conclusions but raise other problems with the panel’s discussion of the social effects of climate change and even more so with popular interpretations of the panel reports. For instance, Hausfather & Peters (2020), by no means ‘climate deniers’, decry the common use of choosing the high-risk [scenario] RCP8.59 to illustrate ‘business as usual’ as misleading.

The causal chains from climate change to the proposed effects on human beings are long and complex, and the uncertainty increases every step of the way. In the literature on the social effects of climate change, including the IPCC reports, statements abound that something ‘may’ lead to something else, or that a variable ‘is sensitive to’ another, without any guidelines for how to translate this into probabilities (Gleditsch & Nordås, 2014: 87f). Uncritical use of the precautionary principle, where any remotely possible calamity unwittingly becomes a probable event, is not helpful.

Gleditsch & Nordås (2014: 85) note that while AR5 (IPCC, 2014) did not find strong evidence for a direct link between climate change and conflict, it argued that climate change is likely to impact known conflict-inducing factors like poverty and inconsistent political institutions and therefore might have an indirect effect on conflict. But this assumes that correlations are transitive, which is not generally the case. If A correlates with B and B with C, we know nothing about how A relates to C unless both correlations are extremely high. The strongest case for the climate–conflict link is the effect of interaction between climate change and factors like poverty, state failure, or ethnic polarization. It may be more cost-effective to try to deal with these other risk factors than with global warming itself if the goal is to reduce the ‘risk multiplier’ effect of climate change on armed conflict.

The articles in this special issue do not generally see scarcity by itself as necessarily resulting in strongly negative outcomes. Factors like development, state failure, and previous overload on ecosystems continue to play an important role in that they interact with climate change to produce conflict and other social outcomes. For instance, Ide, Kristensen & Bartusevicˆius (2021) conclude that the impact of floods on political conflict are contingent on other factors such as population size and regime type. Moreover, most of the articles do not assume that scarcities are likely to arise at the global level. They may be regional (mostly in Africa), national, or local. Urban and rural areas may be affected by different scarcities. Climate change may also affect particularly strongly groups that are already at an economic or political disadvantage. The effects can be alleviated and adaptations constructed at these levels.

The argument about how climate change may indirectly impact conflict leans heavily on the negative economic consequences of climate change, but with little or no reference to the research that explicitly deals with this topic. In fact, the relevant chapter in AR5 concluded that for most sectors of the economy, the impact of climate change was likely to be dwarfed by other factors. Tol (2018) finds that the long-term global economic effects are likely to be negative, but that a century of climate change will have about the same impact on the economy as the loss of one year of economic growth. Other economists are more cautious, but the dean of climate change economics, William Nordhaus (2018: 345, 359), estimates that ‘damages are 2.1 percent of global income at 3C warming and 8.5 percent of income at 6C’, while also warning that the longer the delay in taking decisive action, the harsher the necessary countermeasures. Stern (2006) is more pessimistic, based mainly on a lower discount rate (the interest rate used to calculate the present value of future cash flows) as are Wagner & Weitzman (2015). Heal (2017) argues that the Integrated Assessment Models generally used in the assessment of the economics of climate change are not accurate enough to provide quantitative insights and should not be taken as serious forecasts. Yet, all these economists take the basically optimistic view that climate change is manageable with appropriate policies for raising the price on the emission of greenhouse gases. With a chapter heading from Wagner & Weitzman (2015: 17): ‘We can do this’.

This more optimistic assessment of climate change does not assume that the challenge will go away by itself or can be left to the market. A plausible approach, favored by most economists,10 is the imposition of a robust and increasing price on carbon emissions (whether as a carbon tax or through a cap and trade scheme) high enough to reduce the use of fossil fuels and encourage the search for their replacement. More than 25 countries had such taxes by early 2018 (Metcalf, 2019), but generally not at a level seen as necessary for limiting global warming to, say, 2C. This approach relies on the use of the market mechanism, but with targets fixed by public policy. Income from a carbon tax can be channeled back to the citizens to avoid increasing overall taxation. To speed up the transition, funds can also be allocated to the research and development of cheaper and more efficient production of various forms of fossil-free energy, including nuclear power (Goldstein & Qvist, 2019).

The response of the environmental optimists continues to emphasize the role of innovations; technological innovations, such as improvements in battery technology, the key element in the 2019 Nobel Prize in chemistry,11 but also social innovations, as exemplified by the experimental approach to the alleviation of poverty, rewarded in the same year by the Nobel Prize in economics.12

While the most important countermeasures will be directed at the mitigation of climate change, there is also a strong case for adaptation. If sea-level rise cannot be totally prevented, dikes and flood barriers will be cost-effective and necessary, at least in high-value urban areas. If parts of Africa suffer from drought, there will be increased use for new crops that are more suitable for a dry climate, possibly developed in part by GMO technology. Industrialization in Africa can decrease the one-sided reliance on rain-fed agriculture, as it has in other parts of the world, which have moved human resources from the primary sector to industry (and then to services). Continuing urbanization will move millions out of the most vulnerable communities (Collier, 2010). While structural change failed to produce economic growth in Latin America and Africa after 1990, Africa has experienced a turnaround in the new millennium (McMillan & Rodrik, 2014) and there are also potentials for increasing productivity by structural change within agriculture in Africa (McCullough, 2017).

#### No warming impact and emissions are inevitable

a) Huge uncertainties---climate sensitivity models range from barely any warming to catastrophic with no gauge of certainty

b) Can’t be existential---the worst-case models assume impossible emissions levels with no mitigation or adaptation

c) Timeframe---impacts are slow which allows time to adapt and manage the consequence

d) Renewables worse---fast transition locks in natural gas as a bridge fuel which makes zero emissions impossible OR causes energy shortages because storage tech isn’t ready---that’s Curry.

Judith Curry 19, President of Climate Forecast Applications Network (CFAN), Professor Emerita of Earth and Atmospheric Sciences at the Georgia Institute of Technology, Ph.D. in atmospheric science from the University of Chicago, 2/9/19, “Statement to the Committee on Natural Resources of the United States House of Representatives,” https://curryja.files.wordpress.com/2019/02/curry-testimony-house-natural-resources.pdf

The urgency (?) of CO2 emissions reductions

In the decades since the 1992 UNFCCC Treaty, global CO2 emissions have continued to increase, especially in developing countries. In 2010, the world’s governments agreed that emissions need to be reduced so that global temperature increases are limited to below 2 degrees Celsius.17 The target of 2oC (and increasingly 1.5oC)18 remains the focal point of international climate agreements and negotiations.

The original rationale for the 2oC target is the idea that ‘tipping points’ − abrupt or nonlinear transition to a different climate state − become likely to occur once this threshold has been crossed, with consequences that are largely uncontrollable and beyond our management. The IPCC AR5 considered a number of potential tipping points, including ice sheet collapse, collapse of the Atlantic overturning circulation, and permafrost carbon release. Every single catastrophic scenario considered by the IPCC AR5 (WGII, Table 12.4) has a rating of very unlikely or exceptionally unlikely and/or has low confidence. The only tipping point that the IPCC considers likely in the 21st century is disappearance of Arctic summer sea ice (which is fairly reversible, since sea ice freezes every winter).

In the absence of tipping points on the timescale of the 21st century, the 2oC limit iss more usefully considered by analogy to a highway speed limit:19 driving at 10 mph under the speed limit is not automatically safe, and exceeding the limit by 10 mph is not automatically dangerous, although the faster one travels the greater the danger from an accident. Analogously, the 2oC (or 1.5oC) limit should not be taken literally as a real danger threshold. An analogy for considering the urgency of emissions reductions is your 401K account: if you begin making contributions early, it will be easier to meet your retirement goals.

Nevertheless, the 2oC and 1.5oC limits are used to motivate the urgency of action to reduce CO2 emissions. At a recent UN Climate Summit, (former) Secretary-General Ban Ki-moon warned that: “Without significant cuts in emissions by all countries, and in key sectors, the window of opportunity to stay within less than 2 degrees [of warming] will soon close forever.”20 Actually, this window of opportunity may remain open for quite some time. The implications of the lower values of climate sensitivity found by Lewis and Curry21 and other recent studies is that human caused warming is not expected to exceed the 2oC ‘danger’ level in the 21st century. Further, there is growing evidence that the RCP8.5 scenario for future greenhouse gas concentrations, which drives the largest amount of warming in climate model simulations, is impossibly high, requiring a combination of numerous borderline impossible socioeconomic scenarios.22 A slower rate of warming means there is less urgency to phase out greenhouse gas emissions now, and more time to find ways to decarbonize the economy affordably and with a minimum of unintended consequences. It also allows for the flexibility to revise our policies as further information becomes available.

Is it possible that something truly dangerous and unforeseen could happen to Earth’s climate during the 21st century? Yes it is possible, but natural climate variability (including geologic processes) may be a more likely source of possible undesirable change than manmade warming. In any event, attempting to avoid such a dangerous and unforeseen climate by reducing fossil fuel emissions will be futile if natural climate and geologic processes are dominant factors. Geologic processes are an important factor in the potential instability of the West Antarctic ice sheet that could contribute to substantial sea level rise in the 21st century.23

Under the Paris Agreement, individual countries have submitted to the UNFCCC their Nationally Determined Contributions (NDCs). Under the Obama Administration, the U.S. NDC had a goal of reducing emissions by 28% below 2005 levels by 2025. Apart from considerations of feasibility and cost, it has been estimated24 using the EPA MAGICC model that this commitment will prevent 0.03oC in warming by 2100. When combined with current commitments from other nations, only a small fraction of the projected future warming will be ameliorated by these commitments. If climate models are indeed running too hot,25 then the amount of warming prevented would be even smaller. Even if emissions immediately went to zero and the projections of climate models are to be believed, the impact on the climate would not be noticeable until the 2nd half of the 21st century. Most of the expected benefits to the climate from the UNFCCC emissions reductions policy will be realized in the 22nd century and beyond.

Attempting to use carbon dioxide as a control knob to regulate climate on decadal to century timescales is arguably futile. The UNFCCC emissions reductions policies have brought us to a point between a rock and a hard place, whereby the emissions reduction policy with its extensive costs and questions of feasibility are inadequate for making a meaningful dent in slowing down the expected warming in the 21st century. And the real societal consequences of climate change and extreme weather events (whether caused by manmade climate change or natural variability) remain largely unaddressed.

This is not to say that a transition away from burning fossil fuels doesn’t make sense over the course of the 21st century. People prefer ‘clean’ over ‘dirty’ energy – provided that all other things are equal, such as reliability, security, and economy. However, assuming that current wind and solar technologies are adequate for providing the required amount and density of electric power for an advanced economy is misguided.26

The recent record-breaking cold outbreak in the Midwest is a stark reminder of the challenges of providing a reliable power supply in the face of extreme weather events, where an inadequate power supply not only harms the economy, but jeopardizes lives and public safety. Last week, central Minnesota experienced a natural gas ‘brownout,’ as Xcel Energy advised customers to turn thermostats down to 60 degrees and avoid using hot water.27 Why? Because the wind wasn’t blowing during an exceptionally cold period. Utilities pair natural gas plants with wind farms, where the gas plants can be ramped up and down quickly when the wind isn’t blowing. With bitter cold temperatures and no wind, there wasn’t enough natural gas.

A transition to an electric power system driven solely by wind and solar would require a massive amount of energy storage. While energy storage technologies are advancing, massive deployment of cost-effective energy storage technologies is well beyond current capabilities.28 An unintended consequence of rapid deployment of wind and solar energy farms may be that natural gas power plants become increasingly entrenched in the power supply system.

Apart from energy policy, there are a number of land use practices related to croplands, grazing lands, forests and wetlands that could increase the natural sequestration of carbon and have ancillary economic and ecosystem benefits.29 These co-benefits include improved biodiversity, soil quality, agricultural productivity and wildfire behavior modification.

In evaluating the urgency of CO2 emissions reductions, we need to be realistic about what reducing emissions will actually accomplish. Drastic reductions of emissions in the U.S. will not reduce global CO2 concentrations if emissions in the developing world, particularly China and India, continue to increase. If we believe the climate model simulations, we would not expect to see any changes in extreme weather/climate events until late in the 21st century. The greatest impacts will be felt in the 22nd century and beyond, in terms of reducing sea level rise and ocean acidification.

Resilience, anti-fragility and thrivability

Given that emissions reductions policies are very costly, politically contentious and are not expected to change the climate in a meaningful way in the 21st century, adaptation strategies are receiving increasing attention in formulating responses to climate change.

The extreme damages from recent hurricanes plus the recent billion dollar disasters from floods, droughts and wildfires, emphasize that the U.S. is highly vulnerable to current weather and climate disasters. Even worse disasters were encountered in the U.S. during the 1930’s and 1950’s. Possible scenarios of incremental worsening of weather and climate extremes over the course of the 21st century don’t change the fundamental storyline that many regions of the U.S. are not well adapted to the current weather and climate variability, let alone the range that has been experienced over the past two centuries.

As a practical matter, adaptation has been driven by local crises associated with extreme weather and climate events, emphasizing the role of ‘surprises’ in shaping responses. Advocates of adaptation to climate change are not arguing for simply responding to events and changes after they occur; they are arguing for anticipatory adaptation. However, in adapting to climate change, we need to acknowledge that we cannot know how the climate will evolve in the 21st century, we are certain to be surprised and we will make mistakes along the way.

‘Resilience’ is the ability to ‘bounce back’ in the face of unexpected events. Resilience carries a connotation of returning to the original state as quickly as possible. The difference in impact and recovery from Hurricane Sandy striking New York City in 2012 versus the impact of Tropical Cyclone Nargis striking Myanmar in 200830 reflects very different vulnerabilities and capacities for bouncing back.

To increase our resilience to extreme weather and climate events, we can ‘bounce forward’ to reduce future vulnerability by evolving our infrastructures, institutions and practices. Nicholas Taleb’s concept of antifragility31 focuses on learning from adversity, and developing approaches that enable us to thrive from high levels of volatility, particularly unexpected extreme events. Anti-fragility goes beyond ‘bouncing back’ to becoming even better as a result of encountering and overcoming challenges. Anti-fragile systems are dynamic rather than static, thriving and growing in new directions rather than simply maintaining the status quo.

Strategies to increase antifragility include: economic development, reducing the downside from volatility, developing a range of options, tinkering with small experiments, and developing and testing transformative ideas. Antifragility is consistent with decentralized models of policy innovation that create flexibility and redundance in the face of volatility. This ‘innovation dividend’ is analogous to biodiversity in the natural world, enhancing resilience in the face of future shocks.32

Similar to anti-fragility, the concept of ‘thrivability’ has been articulated by Jean Russell:33 “It isn’t enough to repair the damage our progress has brought. It is also not enough to manage our risks and be more shock-resistant. Now is not only the time to course correct and be more resilient. It is a time to imagine what we can generate for the world. Not only can we work to minimize our footprint but we can also create positive handprints. It is time to strive for a world that thrives.”

A focus on policies that support resilience, anti-fragility and thrivability avoids the hubris of thinking we can predict the future climate. The relevant questions then become:

• How can we best promote the development of transformative ideas and technologies?

• How much resilience can we afford?

The threats from climate change (whether natural or human caused) are fundamentally regional, associated not only with regional changes to the weather/climate, but with local vulnerabilities and cultural values and perceptions. In the least developed countries, energy poverty and survivability is of overwhelming concern, where there are severe challenges to meeting basic needs and their idea of clean energy is something other than burning dung inside their dwelling for cooking and heating. In many less developed countries, particularly in South Asia, an overwhelming concern is vulnerability to extreme weather events such as floods and hurricanes that can set back the local economies for a generation. In the developed world, countries are relatively less vulnerable to climate change and extreme weather events and have the luxury of experimenting with new ideas: entrepreneurs not only want to make money, but also to strive for greatness and transform the infrastructure for society.

Extreme weather/climate events such as landfalling major hurricanes, floods, extreme heat waves and droughts become catastrophes through a combination of large populations, large and exposed infrastructure in vulnerable locations, and human modification of natural systems that can provide a natural safety barrier (e.g. deforestation, draining wetlands). Addressing current adaptive deficits and planning for climate compatible development will increase societal resilience to future extreme events that may possibly be more frequent or severe in the future.

Ways forward

Climate scientists have made a forceful argument for a future threat from manmade climate change. Based upon our current assessment of the science, the threat does not seem to be an existential one on the time scale of the 21st century, even in its most alarming incarnation. However, the perception of manmade climate change as a near-term apocalypse and alignment with range of other social objectives has narrowed the policy options that we’re willing to consider.

#### No impact to warming.

--CO2 levels are historically low

--CO2 is not correlated with higher temperatures

--Humans and fossil fuels are the primary cause of carbon concentrations

Jay Lehr 19, Ph.D. in Groundwater Hydrology from the University of Arizona, and Tom Harris, Executive Director of the International Climate Science Coalition, “Global Warming Myth Debunked: Humans Have Minimal Impact on Atmosphere’s Carbon Dioxide and Climate”, Western Journal, 2-14, https://www.westernjournal.com/global-warming-myth-debunked-humans-minimal-impact-atmospheres-carbon-dioxide-climate/ [language modified]

Global warming activists argue carbon-dioxide emissions are destroying the planet, but the climate impacts of carbon dioxide are minimal, at worst. Activists would also have you believe fossil-fuel emissions have driven carbon-dioxide concentrations to their highest levels in history. The Obama-era Environmental Protection Agency went so far as to classify carbon dioxide as a toxic pollutant, and it established a radical goal of closing all of America’s coal-fired power plants.

Claims of unprecedented carbon-dioxide levels ignore most of Earth’s 4.6-billion-year history. Relative to Earth’s entire record, carbon-dioxide levels are at historically low levels; they only appear high when compared to the dangerously low levels of carbon dioxide that occurred in Earth’s very recent history. The geologic record reveals carbon dioxide has almost always been in Earths’ atmosphere in much greater concentrations than it is today. For example, 600 million years ago, when history’s greatest birth of new animal species occurred, atmospheric carbon-dioxide concentrations exceeded 6,500 parts per million (ppm) — an amount that’s 17 times greater than it is today.

Atmospheric carbon dioxide is currently only 410 parts per million. That means only 0.04 percent of our atmosphere is carbon dioxide (compared to 0.03 percent one century ago). Only one molecule in 2,500 is carbon dioxide. Such levels certainly do not pose a health risk, as carbon-dioxide levels in our naval submarines, which stay submerged for months at a time, contain an average carbon-dioxide concentration of 5,000 ppm.

The geologic record is important because it reveals relationships between carbon-dioxide levels, climate, and life on Earth. Over billions of years, the geologic record shows there is no long-term correlation between atmospheric carbon-dioxide levels and Earth’s climate. There are periods in Earth’s history when carbon dioxide concentrations were many times higher than they are today, yet temperatures were identical to, or even colder than, modern times. The claim that fossil-fuel emissions control atmospheric carbon-dioxide concentrations is also invalid, as atmospheric concentrations have gone up and down in the geological record, even without human influence.

The absurdity of climate alarmism claims gets even stranger when you consider there are 7.5 billion people on our planet who, together, exhale 2.7 billion tons of carbon dioxide each year, which is almost 10 percent of total fossil-fuel emissions every year. However, we are but a single species. Combined, people and all domesticated animals contribute 10 billion tons.

Further, 9 percent of carbon-dioxide emissions from all living things arise not from animals, but from anaerobic bacteria and fungi. These organisms metabolize dead plant and animal matter in soil via decay processes that recycle carbon dioxide back into the atmosphere. The grand total produced by all living things is estimated to be 440 billion tons per year, or 13 times the amount of carbon dioxide currently being produced by fossil-fuel emissions. Fossil-fuel emissions are less than 10 percent of biological emissions. Are you laughing yet?

Every apocalyptic pronouncement you hear or read is [totally wrong] ~~nothing short of insanity~~. Their primary goal is not to save plants, humans, or animals, but rather to use climate “dangers” as a justification for centralizing power in the hands of a select few.

#### Even extreme warming won’t cause extinction

Dr. Toby Ord 20, Senior Research Fellow in Philosophy at Oxford University, DPhil in Philosophy from the University of Oxford, The Precipice: Existential Risk and the Future of Humanity, Hachette Books, Kindle Edition, p. 110-112

But the purpose of this chapter is finding and assessing threats that pose a direct existential risk to humanity. Even at such extreme levels of warming, it is difficult to see exactly how climate change could do so. Major effects of climate change include reduced agricultural yields, sea level rises, water scarcity, increased tropical diseases, ocean acidification and the collapse of the Gulf Stream. While extremely important when assessing the overall risks of climate change, none of these threaten extinction or irrevocable collapse.

Crops are very sensitive to reductions in temperature (due to frosts), but less sensitive to increases. By all appearances we would still have food to support civilization.85 Even if sea levels rose hundreds of meters (over centuries), most of the Earth’s land area would remain. Similarly, while some areas might conceivably become uninhabitable due to water scarcity, other areas will have increased rainfall. More areas may become susceptible to tropical diseases, but we need only look to the tropics to see civilization flourish despite this. The main effect of a collapse of the system of Atlantic Ocean currents that includes the Gulf Stream is a 2°C cooling of Europe—something that poses no permanent threat to global civilization.

From an existential risk perspective, a more serious concern is that the high temperatures (and the rapidity of their change) might cause a large loss of biodiversity and subsequent ecosystem collapse. While the pathway is not entirely clear, a large enough collapse of ecosystems across the globe could perhaps threaten human extinction. The idea that climate change could cause widespread extinctions has some good theoretical support.86 Yet the evidence is mixed. For when we look at many of the past cases of extremely high global temperatures or extremely rapid warming we don’t see a corresponding loss of biodiversity.87

[FOOTNOTE]

We don’t see such biodiversity loss in the 12°C warmer climate of the early Eocene, nor the rapid global change of the PETM, nor in rapid regional changes of climate. Willis et al. (2010) state: “We argue that although the underlying mechanisms responsible for these past changes in climate were very different (i.e. natural processes rather than anthropogenic), the rates and magnitude of climate change are similar to those predicted for the future and therefore potentially relevant to understanding future biotic response. What emerges from these past records is evidence for rapid community turnover, migrations, development of novel ecosystems and thresholds from one stable ecosystem state to another, but there is very little evidence for broad-scale extinctions due to a warming world.” There are similar conclusions in Botkin et al. (2007), Dawson et al. (2011), Hof et al. (2011) and Willis & MacDonald (2011). The best evidence of warming causing extinction may be from the end-Permian mass extinction, which may have been associated with large-scale warming (see note 91 to this chapter).

[END FOOTNOTE]

So the most important known effect of climate change from the perspective of direct existential risk is probably the most obvious: heat stress. We need an environment cooler than our body temperature to be able to rid ourselves of waste heat and stay alive. More precisely, we need to be able to lose heat by sweating, which depends on the humidity as well as the temperature.

A landmark paper by Steven Sherwood and Matthew Huber showed that with sufficient warming there would be parts of the world whose temperature and humidity combine to exceed the level where humans could survive without air conditioning.88 With 12°C of warming, a very large land area—where more than half of all people currently live and where much of our food is grown—would exceed this level at some point during a typical year. Sherwood and Huber suggest that such areas would be uninhabitable. This may not quite be true (particularly if air conditioning is possible during the hottest months), but their habitability is at least in question.

However, substantial regions would also remain below this threshold. Even with an extreme 20°C of warming there would be many coastal areas (and some elevated regions) that would have no days above the temperature/humidity threshold.89 So there would remain large areas in which humanity and civilization could continue. A world with 20°C of warming would be an unparalleled human and environmental tragedy, forcing mass migration and perhaps starvation too. This is reason enough to do our utmost to prevent anything like that from ever happening. However, our present task is identifying existential risks to humanity and it is hard to see how any realistic level of heat stress could pose such a risk. So the runaway and moist greenhouse effects remain the only known mechanisms through which climate change could directly cause our extinction or irrevocable collapse.

This doesn’t rule out unknown mechanisms. We are considering large changes to the Earth that may even be unprecedented in size or speed. It wouldn’t be astonishing if that directly led to our permanent ruin. The best argument against such unknown mechanisms is probably that the PETM did not lead to a mass extinction, despite temperatures rapidly rising about 5°C, to reach a level 14°C above pre-industrial temperatures.90 But this is tempered by the imprecision of paleoclimate data, the sparsity of the fossil record, the smaller size of mammals at the time (making them more heat-tolerant), and a reluctance to rely on a single example. Most importantly, anthropogenic warming could be over a hundred times faster than warming during the PETM, and rapid warming has been suggested as a contributing factor in the end-Permian mass extinction, in which 96 percent of species went extinct.91 In the end, we can say little more than that direct existential risk from climate change appears very small, but cannot yet be ruled out.

### Warming D---Adaptation

#### No impact to warming

Cliff Mass 19, American professor of Atmospheric Sciences at the University of Washington. His research focuses on numerical weather modeling and prediction, the role of topography in the evolution of weather systems, regional climate modeling, and the weather of the Pacific Northwest, “Is Global Warming an Existential Threat? Probably Not, But Still a Serious Issue,” Cliff Mass, 8/12/19, https://cliffmass.blogspot.com/2019/08/is-global-warming-existential-threat.html

An existential threat is one that threatens the very existence of [hu]manankind. Something that is a simply a challenge or an inconvenience is not an existential threat. An existential threat must have the potential to undermine the very viability of human civilization.

As described below, global warming is a serious problem and its impacts will be substantial – but in no way does it seriously threaten our species or human civilization. And with reasonable mitigation and adaptation, [hu]mankind will continue to move forward – reducing poverty, living healthier lives, and stabilizing our population.

What do current climate models tell us? These models are run under specific scenarios of emission of CO2 and other greenhouse gases (see figure). In one, RCP8.5, we simply continue doing what we are doing, with escalating use of coal and oil. Not much renewable energy. Many believe this scenario is too pessimistic. Much more reasonable is RCP 4.5, which has modestly increased emissions through 2040, declining after 2050. I suspect this one will be closer to reality.

The implication of these emissions on global temperature is shown below based on a collection of climate models (CMIP-5). Under the extreme scenario, the earth warms by about 4C, but for the reasonable one (RCP4.5), global warming is about 2C (3.6F). This warming will not be uniform, being greater in the polar regions, less over the eastern oceans.

You will note the temperature rise in RCP 4.5 is relatively steady through around 2045 and then starts to gradually plateau out. No sharp transitions, no falling off of a cliff, no sudden catastrophes.

I have run a large collection of high resolution climate simulations over the Northwest, driven by the aggressive RCP 8.5 scenario. As shown for Seattle's mean annual temperature below, there is a steady rise, again with no sudden changes that would be hard to adapt to. Most NW folks will want to purchase an air conditioner for summer, but there is no threat to our existence, and winters will be more pleasant.

But what do official international and national evaluations project for the economic future?

First, let's check the conclusions of the highly respect Intergovernmental Panel on Climate Change (IPCC), which provides a consensus view of many scientists and nations. Their analysis (SR15, Chapter 3) quoted a paper by Yohe (2017) that found a U.S. GDP loss of 1.2% per degree of warming, So with a 2 C global warming associated with RCP4.5, we are talking about a 2.4% loss of national income in 2100. Not a 2.4% loss from today's levels, but 2.4% less of the substantially greater income in 2100.

What about the recently released Fourth National Climate Assessment, a document heavily cited by the U.S. environmental community? Their analysis is that the damage to the U.S. economy in 2100 would be about a 1% loss (see below) This is not a 1% loss from the current U.S. gross domestic product (GDP), but a 1% loss of the substantially great GDP in 2100. We will be much richer in 2100, and will lose 1 % of our GDP because of global warming. Doesn't sound like the end of civilization, does it?

W. D. Nordhaus, who won a Nobel Prize in economics for his study of the economic impacts of climate change, examined a large number of studies regarding the impacts of global warming on the world's economy (see below). He and his co-author (A Moffat) found that a 2C increase in global temperatures would result in 0-1% damage to the world economy in 2100. Doubling the warming would only increase the damage to around 3%. Again, no existential threat.

Reading these numbers and considering the many reports backing them up, there clearly is no existential threat to either the U.S. or mankind from global warming, leaving one to wonder why are so many politicians, environmental activists, and lots of media are spreading this existential threat line.

And the above studies are not really considering the potential for major technical breakthroughs in energy generation (e.g., fusion), renewables energy sources, or carbon removal form the atmosphere (sequestration). I believe that such advances are inevitable, just as no one in 1950 expected that 2000 would bring personal computers, cell phones, and more.

You also have to wonder whether scientists, politicians, and environmental folks really believe the existential threat warnings they throw around. Many talk the talk, but most don't walk the walk.

Presidential candidates with little chance of securing the nomination are flying back and forth around the country, resulting in enormous carbon footprints. Climate scientists fly more for work and pleasure than anyone. Many environmentalists oppose nuclear power, one of the technologies that could produce massive carbon-free energy. And several local Washington State environmental groups opposed a revenue-neutral, bipartisan carbon tax initiative (I-732).

Global warming is a real issue and we are going to slowly warm our planet, resulting in substantial impacts (like less snowpack in the Cascades, increased river flooding in November, drier conditions in the subtropics, loss of Arctic sea ice). But the world will be a much richer place in 2100 and mankind will find ways to adapt to many of the changes. And there is a good chance we will develop the technologies to reverse the increasing trend in greenhouse gases and eventually bring CO2 concentrations down to previous levels.

Global warming does not offer an existential threat to mankind, and politicians and decision makers only undermine their credibility and make effective action less likely by their hype and exaggeration. And their unfounded claims of future catastrophe prevents broad national consensus and hurts vulnerable people who are made anxious and fearful. And just as bad, all this end of the world talk results in folks turning away from the issue, both out of fear and from intuition that a lot of hype is going on.

#### Warming is slow and non-anthropogenic

Vijay Jayaraj 18, M.Sc. in Environmental Science from the University of East Anglia, England and Research Associate for Developing Countries for the Cornwall Alliance for the Stewardship of Creation, “Four Reasons Alarmists Are Wrong on Climate Change”, MasterResource, 4/26/2018, https://www.masterresource.org/alarmism/four-reasons-alarmists-wrong-climate-change/

Climate-change alarmists have long called the current warming period “unprecedented” and “dangerous.” But is it?

Ironically, this Earth Day fell in the midst of one of the coldest Aprils in North American history. The severe winter of 2017–2018 has raised debates from two contrasting ends.

While some uninformed people claim it disproves global warming, climate alarmists claim it is just another evidence for global warming.

Deniers, Alarmists and Skeptics

Actual climate-change deniers—and they are very few—categorically deny the warming trend. On the other end of the spectrum are climate-change alarmists, who claim that the current warming trend is catastrophic and driven almost exclusively by emission of carbon dioxide from human activities, especially industrialization.

Skeptics Are Not Deniers

Scientific progress depends on the freedom to challenge existing hypotheses. Surprisingly, though, anyone who disagrees with climate-change alarmists is branded a “denier.”

That is very misleading. Most well-known skeptics disagree on the magnitude and cause of warming, but not on whether it’s happening; and they also disagree about the consequences of warming and about mankind should respond.

Real climate-change deniers should be called out. They are as dangerous as climate-change alarmists, who impede scientific advancement and lead the masses into believing extreme theories using scare tactics.

Both climate-change deniers and climate-change alarmists are wrong on their claims about the implications of this winter and how they interpret the behaviour of the earth’s climatic system over the past 2000 years. Here are four reasons why:

Global warming is real. Scientists disagree only on its magnitude and causes and how we should respond to it.

Four major temperature data sets are available to us: historical data inferred from proxy temperature measurements (primarily tree-rings and ice cores), global mean surface temperature data from thermometers (measured since the 1880s), radiosonde (weather balloon) temperature measurements (first used in 1896 but not common until the 1950s), and temperature data gathered by satellites (since the 1970s).

Temperature measurements from these sources indicate that the earth has, with fluctuations, generally been warming since the end of the Little Ice Age (roughly 1350–1850).

Skeptics differ from alarmists on the primary cause for this warming (a subject to which I’ll return below), its magnitude, the supposed dangers it might bring, and how to respond.

Human emissions of carbon dioxide are one of many causes are of global warming, but they’re not the primary driver.

Climate data from the past contradict the alarmist’s claims that carbon dioxide emissions from human activity have been the primary drivers of global temperatures.

Data show that the current warming is not unprecedented but was matched by the Roman Warm Period (roughly 250–400) and Medieval Warm Period (roughly 950–1250).

During those periods, carbon dioxide emissions from human activity were negligible compared to today’s levels. It follows that warming of the magnitude of the last 150 years or more can happen with or without human contribution.

Further, no conclusive evidence shows that the current warming has been exaggerated by human emissions.

Carbon dioxide emission from human activity has actually failed to cause substantial increase in global temperatures.

Climate alarmists, relying on computer climate models, predicted that the earth’s temperature would increase rapidly (typical predictions calling for about 0.3ºC of warming per decade) over the past two decades. Their forecasts proved to be wrong. Global average temperature failed to rise significantly during the past 18 years, despite a record increase in carbon dioxide emissions, and its average rate since the end of the 1970s has been only about half what the models simulate.

In other words, the models exaggerate the impact of human carbon dioxide emissions on the temperature.

This pivotal failure in scientific understanding (of how carbon dioxide influences temperature) was acknowledged by even the staunchest climate alarmists.

This was more recently confirmed by hundreds of scientific papers that attribute the recent warming to natural causes and affirm that there is nothing abnormal with the climate.

Record highs don’t prove extreme global warming.

An increasing number of record highs does not prove or disprove catastrophic anthropogenic global warming. They are merely changes in temperature within a larger climatic period.

#### No tipping points or impact for 100 years

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The climate change debate has been polarized into a simple dichotomy. Either global warming is “real, man-made and dangerous,” as Pres. Barack Obama thinks, or it’s a “hoax,” as Oklahoma Sen. James Inhofe thinks. But there is a third possibility: that it is real, man-made and not dangerous, at least not for a long time. This “lukewarm” option has been boosted by recent climate research, and if it is right, current policies may do more harm than good. For example, the Food and Agriculture Organization of the United Nations and other bodies agree that the rush to grow biofuels, justified as a decarbonization measure, has raised food prices and contributed to rainforest destruction. Since 2013 aid agencies such as the U.S. Overseas Private Investment Corporation, the World Bank and the European Investment Bank have restricted funding for building fossil-fuel plants in Asia and Africa; that has slowed progress in bringing electricity to the one billion people who live without it and the four million who die each year from the effects of cooking over wood fires. In 1990 the Intergovernmental Panel on Climate Change (IPCC) was predicting that if emissions rose in a “business as usual” way, which they have done, then global average temperature would rise at the rate of about 0.3 degree Celsius per decade (with an uncertainty range of 0.2 to 0.5 degree C per decade). In the 25 years since, temperature has risen at about 0.1 to 0.2 degree C per decade, depending on whether surface or satellite data is used. The IPCC, in its most recent assessment report, lowered its near-term forecast for the global mean surface temperature over the period 2016 to 2035 to just 0.3 to 0.7 degree C above the 1986–2005 level. That is a warming of 0.1 to 0.2 degree C per decade, in all scenarios, including the high-emissions ones. At the same time, new studies of climate sensitivity—the amount of warming expected for a doubling of carbon dioxide levels from 0.03 to 0.06 percent in the atmosphere—have suggested that most models are too sensitive. The average sensitivity of the 108 model runs considered by the IPCC is 3.2 degrees C. As Pat Michaels, a climatologist and self-described global warming skeptic at the Cato Institute testified to Congress in July, certain studies of sensitivity published since 2011 find an average sensitivity of 2 degrees C. Such lower sensitivity does not contradict greenhouse-effect physics. The theory of dangerous climate change is based not just on carbon dioxide warming but on positive and negative feedback effects from water vapor and phenomena such as clouds and airborne aerosols from coal burning. Doubling carbon dioxide levels, alone, should produce just over 1 degree C of warming. These feedback effects have been poorly estimated, and almost certainly overestimated, in the models. The last IPCC report also included a table debunking many worries about “tipping points” to abrupt climate change. For example, it says a sudden methane release from the ocean, or a slowdown of the Gulf Stream, are “very unlikely” and that a collapse of the West Antarctic or Greenland ice sheets during this century is “exceptionally unlikely.” If sensitivity is low and climate change continues at the same rate as it has over the past 50 years, then dangerous warming—usually defined as starting at 2 degrees C above preindustrial levels—is about a century away. So we do not need to rush into subsidizing inefficient and land-hungry technologies, such as wind and solar or risk depriving poor people access to the beneficial effects of cheap electricity via fossil fuels. As the upcoming Paris climate conference shows, the world is awash with plans, promises and policies to tackle climate change. But they are having little effect. Ten years ago the world derived 87 percent of its primary energy from fossil fuels; today, according the widely respected BP statistical review of world energy, the figure is still 87 percent. The decline in nuclear power has been matched by the rise in renewables but the proportion coming from wind and solar is still only 1 percent. Getting the price of low-carbon energy much lower will do the trick. So we should spend the coming decades stepping up research and development of new energy technologies. Many people may reply that we don’t have time to wait for that to bear fruit, but given the latest lukewarm science of climate change, I think we probably do.

#### Their models are wrong and adaptation solves

Dr. Indur Golanky 15, PhD from Michigan State, Assistant Director of Programs, Science and Technology Policy at the DOI, Represented the United States at the Intergovernmental Panel on Climate Change (IPCC) and during the negotiations that led to the United Nations Framework Convention on Climate Change, “CARBON DIOXIDE: The Good News”, The Global Warming Policy Foundation, GWPF Report 18) [[figures omitted]]

The impacts of global warming are generally estimated using chains of linked computer models. Each chain begins with a climate model, which itself is driven by a set of socioeconomic scenarios based on assumptions for population, economic development and technological change over the entire period of the analysis (often 50– 100 years or more). The climate model is followed by various biophysical, economic and other downstream models to estimate changes in different aspects of human 23 activity or welfare, for example agriculture, forestry, health or biodiversity. The uncertain outputs of each upstream model serve as the inputs of the subsequent downstream model, with the uncertainties cascading down the chain so that the individual streams of uncertainty combine into a regular torrent. For example, to estimate the impacts on agriculture and food security, the outputs of the climate model are fed into various crop models to estimate yields, which then are linked to economic models to estimate supply and demand for the various crops. Supply and demand are then reconciled via national, regional and global scale trade models.142 Notably, despite the cascade of uncertainties, to date no climate change impact assessment has provided an objective estimate of the cumulative uncertainty, starting with the socioeconomic scenarios through to the impact estimate. The ranges of uncertainty presented in the IPCC impact reports are generally based on the uncertainties only from using different climate scenarios. But these are much narrower than the true uncertainties that would have been estimated had the full cascade of uncertainties been considered. Models have not been validated One reason that doom-laden predictions about human wellbeing have failed is that orthodox climate scientists have neglected to apply the scientific method: specifically they have not checked their hypotheses and biases embodied in their models against empirical reality. As we have seen, simple reality checks show that environmental and human wellbeing is not currently deteriorating. Validation of these models using such reality checks would have limited their divergence from reality, and also reduce the uncertainties that are inevitably compounded as one progresses down the chain of models. Climate models overstate global warming Firstly, the global climate has not been warming as rapidly as projected in the IPCC assessment reports. Figure 5 compares observed global surface temperature data from 1986 through 2012 versus modelled results. It confirms that models have been running hotter than reality. But these are the projections that governments have relied on to justify global warming policies, including subsidies for biofuels and renewable energy while increasing the overall cost of energy to the general consumer – costs that disproportionately burden those that are poorer. A comparison of performance of 117 simulations using 37 models versus empirical data from the HadCRUT4 surface temperature data set indicates that the vast majority of the simulations/models have overestimated warming.143 The models indicated that the average global temperature would increase by 0.30±0.02◦Cper decade during the period from 1993 to 2012 but empirical data show an increase of only 0.14±0.06◦C per decade.144 Model performance was even worse for the more recent 15-year period of 1998–2012. Here the average modelled trend was 0.21±0.03◦C per decade, quadruple the observed trend of 0.05±0.08◦C. Considering the confidence interval, the observed trend is indistinguishable from no trend at all; that is, warming has, for practical purposes, halted. Even the IPCC acknowledges the existence of this ‘hiatus’.145 Moreover, the HadCRUT4 temperature database indicates that the global warming rate declined from 0.11◦C per decade from 1951–2012 to 0.04◦C per decade from 1998–2012.146 This is despite the fact that, per the IPCC, the anthropogenic greenhouse gas forcing for 2010 (2.25 W/m2) exceeded what was used in the models for 2010 (1.78–1.84 W/m2) by around 25%.147 Some have argued that satellite temperature data should be preferred over surface datasets. In fact, satellite coverage is more comprehensive and more representative of the Earth’s surface than is achievable using surface stations, even if the latter were to number in the thousands. A recent review paper notes that satellites can provide ‘unparalleled global- and fine-scale spatial coverage’ presumably because of ‘more frequent and repetitive coverage over a larger area than other observation means’.148 In addition, surface measurements are influenced by the measuring stations’ microenvironments, which will vary not only from station to station at any given time, but also over time at the very same station, as vegetation and man-made structures in their vicinity spring up, evolve and change.149 Satellite temperature data indicates that the globe has been warming at the rate of 0.12–0.14◦C per decade since 1979;150 by contrast, the IPCC assessments over the last 25 years have been projecting a warming trend of 0.2–0.4◦C per decade.151,152 The 25 differences between modelled trends and those from satellites and weather balloons are shown in Figures 6 and 7.153 Nevertheless, based on these chains of unvalidated computer models, orthodox thinkers on climate change claim that global warming will, among other things, lower food production, increase hunger, cause more extreme weather, increase disease, and threaten water supplies. The cumulative impact will, they claim, diminish living standards and threaten species, and if carbon dioxide and other greenhouse gases are not curbed soon, pose an existential threat to humanity and the rest of nature. Some claim it may already be too late.154 The group 350.org, for instance, agitates for reducing atmospheric carbon dioxide levels, currently at 400 ppm, to 350 ppm, a level the earth last experienced in 1988.155 But since then, global GDP per capita has increased 60%, infant mortality has declined 48%, life expectancy has increased by 5.5 years, and the poverty headcount has dropped from 43% to 17% despite a population increase of 40%. Nostalgia for a 350 ppm world seems somewhat misplaced, if not downright perverse.156,157 Climate models don’t do local well It is not clear what logical process was used to arrive at these allegations. It may stem from the fact that orthodox thinkers on climate, in the grip of confirmation bias, are unable or unwilling to acknowledge that, unless a climate or weather event is truly unprecedented then the default assumption – the ‘null hypothesis’ in scientific parlance – should be that it is part of normal climate variability rather than manmade global warming. Some have used the results of modelling exercises that purport to assess the future impacts, usually in the latter part of this century, and then ‘interpolated’ these results back to the present day.158,159,160 The first step in such an exercise relies on climate models to project the future climate. But we have seen that these models have failed the reality test with respect to globally averaged surface temperature over the past two decades or more. To compound matters, the performance of climate models relative to reality worsens as one attempts to project surface temperatures at smaller geographical scales. 27 Climate models don’t do precipitation well More importantly, the wellbeing of human beings and the rest of nature is probably more sensitive to changes in precipitation than to temperature, and precipitation is highly variable from spot to spot. But climate models perform even worse for precipitation than they do for temperature, regardless of the geographic scale. In fact, for several areas many models are unable to reliably hindcast past precipitation, let alone forecast the future.161,162 Notsurprisingly, precipitation projections using different models often contradict each other. For example, a recent study of annual precipitation changes in California using 25 model projections indicates that ‘12 projections show drier annual conditions by the 2060s and 13 show wetter.’163 Thus impact assessments that use as their starting point the outputs of these climate models cannot and should not be relied upon to develop policies, although they may have scientific diagnostic value for improving our understanding of climate mechanisms and processes. Adaptation methodology is flawed Failure to properly account for adaptation Even if climate models represented reality perfectly and were able to foretell the future climate, impact assessments would still be suspect. This is because most global warming impact assessments assume little or no endogenous (or autonomous) adaptation. For example, the vast majority of studies of global warming impacts on water resources do not incorporate any allowance for adaptive measures that might be taken to reduce those impacts, despite the fact that steps of this nature have been taken since time immemorial.164,165 For instance, the world’s oldest functioning dam, at Lake Homs in Syria, dates back to 1319 BC,166 and qanats, underground canals to convey water for human settlements and irrigation, were built in Persia as long ago as the first millennium BC.167 Similarly, of the many studies used by the IPCC to estimate future impacts on crop yields, 63% did not consider improvements in the agricultural sector’s adaptive capacity.168 Moreover, specific adaptive measures used in many global warming impact studies are based on surveys of available technologies from the 1990s. However, today suitable adaptation measures are both more numerous and cheaper.169 And because we are wealthier, these options are even more affordable.170 Consequently, our ability to adapt has improved markedly just in the past few decades or so.171 As proof, consider the previously noted global increases in, for example, crop yields, access to safer water, and life expectancy on one hand, and reductions in poverty and mortality from vector-borne diseases and extreme weather events on the other. These examples suggest that neglecting adaptive capacity and technological change can, over the course of several decades, lead to estimates of impacts that are too pessimistic by an order of magnitude or more.172 28 Another factor that is ignored in impacts assessments is the tremendous increase in our interconnectedness due to the internet, e-mail, text messages, and cell phones. As a result, the dissemination of knowledge is today far faster and wider than what was possible two or three decades ago. This increase in connectivity alone has considerably enhanced humanity’s adaptive capacity.173 Also ignored is the array of technologies that are collectively called ‘precision farming’: the growing ability to monitor plant growth, nutrient deficiencies and the environmental conditions at finer scales, combined with techniques that use GPS and drones to more precisely deliver nutrients and water to crops. Today these technologies can be afforded by wealthy farmers in rich countries. Over time, they should, like all other technologies, also diffuse around the world as their costs drop and as rising incomes make them more affordable. Such techniques should reduce agriculture’s demand for water. Because agriculture is responsible for about 70% of global water consumption, this ought to free up water for other human uses and substantially reduce water stress.174 A 20% increase in global agricultural water-use efficiency should, for example, translate into a global increase of 39% in water available for nonagricultural use.

### Warming D---No Extinction---2NC

#### It’d have to be 12 degrees---but intervening actors solve before then

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The most likely levels of global warming are very unlikely to cause human extinction.15 The existential risks of climate change instead stem from tail risk climate change – the low probability of extreme levels of warming – and interaction with other sources of risk. It is impossible to say with confidence at what point global warming would become severe enough to pose an existential threat. Research has suggested that warming of 11-12°C would render most of the planet uninhabitable,16 and would completely devastate agriculture.17 This would pose an extreme threat to human civilisation as we know it.18 Warming of around 7°C or more could potentially produce conflict and instability on such a scale that the indirect effects could be an existential risk, although it is extremely uncertain how likely such scenarios are.19 Moreover, the timescales over which such changes might happen could mean that humanity is able to adapt enough to avoid extinction in even very extreme scenarios. The probability of these levels of warming depends on eventual greenhouse gas concentrations. According to some experts, unless strong action is taken soon by major emitters, it is likely that we will pursue a medium-high emissions pathway.20 If we do, the chance of extreme warming is highly uncertain but appears non-negligible. Current concentrations of greenhouse gases are higher than they have been for hundreds of thousands of years,21 which means that there are significant unknown unknowns about how the climate system will respond. Particularly concerning is the risk of positive feedback loops, such as the release of vast amounts of methane from melting of the arctic permafrost, which would cause rapid and disastrous warming.22 The economists Gernot Wagner and Martin Weitzman have used IPCC figures (which do not include modelling of feedback loops such as those from melting permafrost) to estimate that if we continue to pursue a medium-high emissions pathway, the probability of eventual warming of 6°C is around 10%,23 and of 10°C is around 3%.24 These estimates are of course highly uncertain. It is likely that the world will take action against climate change once it begins to impose large costs on human society, long before there is warming of 10°C. Unfortunately, there is significant inertia in the climate system: there is a 25 to 50 year lag between CO2 emissions and eventual warming,25 and it is expected that 40% of the peak concentration of CO2 will remain in the atmosphere 1,000 years after the peak is reached.26 Consequently, it is impossible to reduce temperatures quickly by reducing CO2 emissions. If the world does start to face costly warming, the international community will therefore face strong incentives to find other ways to reduce global temperatures.

#### It won’t cause extinction

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That’s part of the reason that climate scientists have criticized activist rhetoric that humans have until 2030 to stop dangerous climate change. Sure, it might soon be too late to meet some of our most ambitious climate goals, such as keeping warming to 1.5 degrees Celsius, yet any amount of action in the present will help create a less overheated planet in the future.

So is climate change an existential threat? According to the scientific definition, likely not. As far as scientists can predict, a warming planet won’t cause changes so severe that they threaten the survival of the entire human species. And there is evidence that some of our most pessimistic projections may be exaggerated (though a Hothouse Earth wouldn’t be so fun).

That’s the sort-of good news. The bad news is that saying climate change won’t kill all of humanity is … pretty much the lowest bar possible.

In the meantime, politicians should be careful not to deploy the term “existential threat” too loosely. In all likelihood, they don’t mean that human life on the planet will go extinct. They mean that climate change is a really, really big deal and must be taken seriously. That should be sufficient reason to act.

#### Even the most extreme tail end risks from warming won’t cause extinction for billions of years.

Anders **Sandberg 18**. Future of Humanity Institute, University of Oxford. 02/26/2018. “Human Extinction from Natural Hazard Events.” Oxford Research Encyclopedia of Natural Hazard Science. oxfordre.com, doi:10.1093/acrefore/9780199389407.013.293.

Climate Change Climate has a profound effect on where and how humans can survive, and natural climate change poses a set of potential extinction risks. These include concerns about an end to the interglacial returning earth to its ice-age state, global droughts, as well as global warming. The threat is primarily to food security rather than direct temperature effects, flooding or extreme weather events. Sudden cooling can occur for a variety of reasons and can threaten agriculture globally (Engvild, 2003). Since food stocks at present are smaller than yearly production more than a year of agricultural interruption poses a serious threat to the survival of most of the population. In the past climate change has likely threatened the early H. sapiens by long periods of drought or ecological change, typically driven by the glacial cycles. Cooling periods have been associated with population contractions and extinctions (Foley, 1994; Gamble et al., 2004). Still, given human survival through these cycles they have been insufficient to cause species extinction. Typical discussions of anthropogenic climate change focus on scenarios with a few °C of warming, because such scenarios are high probability, they are near-term and can be analyzed using current data and models. Such “normal” climate change (comparable to past temperature change during the Holocene [Marcott et al., 2013]) is expected to affect food security but not in a radical way. An increase in climate related extremes such as floods, droughts, cyclones, and wildfires can be expected but would do mainly localized damage. Reductions in agricultural productivity and water scarcity are to be expected. Effects depend on the vulnerability profile of different regions but are overall negative (Schmidhuber & Tubiello, 2007; IPCC, 2014). Still, despite serious local problems the overall situation appears to pose no major risk to the survival of the species. Large temperature increases (4+ °C) would affect ecosystems at the same level as human land-use changes, cause substantial increase in extinction of non-human species, and increase the probability of large-scale tipping points (when a smooth change of parameters leads to an abrupt qualitative change in behavior) such as disintegrating ice sheets, methane release from undersea deposits (clathrates), and long-term droughts in some areas that act as reinforcing feedbacks for a changed climate and ecosystem. At this point crop yields can be expected to drop on the order of 20% or more (depending on crop and location), outdoor activity in the tropics becomes impaired, and global food security becomes less stable (IPCC, 2014). While this could seriously stress human societies or force a smaller population it is again not per se an extinction risk. However, little is known about tail risks corresponding to higher temperature increases; uncertainty about climate sensitivity and future emissions is compounded by the possibility of positive feedbacks producing significantly more warming. Wagner and Weitzman (2016) argued, based on IPCC data, that depending on emission scenario there is a 3% to 10% risk of a 6+ °C increase. At this point large regions would be too warm for unprotected humans to survive in, and beyond 11–12 °C warming this would encompass most currently inhabited regions (King et al., 2015; Sherwood & Huber, 2010). While this does not ensure extinction, the global population would have a constrained and vulnerable habitat. An even more extreme scenario would be causing a runaway greenhouse effect sterilizing earth. However, this is unlikely to be possible through adding greenhouse gases (Goldblatt & Watson, 2012). Conversely, triggering a snowball earth state (where the surface is nearly entirely frozen and the ice and snow maintains the low temperature by reflecting sunlight into space effectively) would require a 10% reduction in solar input, or a more modest reduction plus drastically lower CO2 levels (Yang, Peltier, & Hu, 2012). Although the biosphere is expected to destabilize eventually (dooming any terrestrial species) the expected lifespan is on the order of 1.6–2 billion years. The cause of extinction is thought to be the increasing solar luminosity, making conditions too hot, combined with CO2 levels becoming too low for photosynthesis, or water loss to space (Franck, Bounama, & von Bloh, 2006; Wolf & Toon, 2015).

### Warming D---No Feedbacks

#### This relies on model projections of fast warming and tipping points, but the observed temperature record proves those models overestimate the speed of warming

Ross J. Salawitch 17, Professor, Department of Atmospheric & Oceanic Science and Department of Chemistry and Biochemistry, University of Maryland, with Timothy P. Canty, Austin P. Hope, Walter R. Tribett, Brian F. Bennett, *Paris Climate Agreement: Beacon of Hope*, 2017, pp. 54-56

[ΔT changed to “temperature change”]

Two other scenarios, RCP 6.0 (Masui et al. 2011) and RCP 2.6 (van Vuuren et al. 2011b), were considered by IPCC (2013). The mixing ratio of CO2 peaks at about 670 ppm at end-century for RCP 6.0 (Fig. 2.1); the climate consequences for this scenario clearly lie between those of RCP 4.5 and RCP 8.5. For RCP 2.6, CO2 peaks mid-century and slowly declines to 420 ppm at end-century.6 According to the authors of RCP 2.6, this scenario “is representative of the literature on mitigation scenarios aiming to limit the increase of global mean temperature to 2 °C”. While this is true for literal interpretation of the output of the GCMs that contributed to the most recent IPCC report (Rogelj et al. 2016), below we show these GCMs likely over-estimate the actual warming that will occur in the coming decades.

Figure 2.3 shows projections of ΔT from the CMIP5 GCMs found using RCP 4.5 and RCP 8.5. Observations of ΔT from CRU, NCEI, and GISS up to year 2012, as well as the CRU estimate of the uncertainty on ΔT, are shown. The green hatched trapezoid in Fig. 2.3 is the “indicative likely range for annual mean ΔT” provided by Chap. 11 of IPCC (2013).7 Section 11.3.6.3 of this report states:

some CMIP5 models have a higher transient response to GHGs and a larger response to other anthropogenic forcings (dominated by the effects of aerosols) than the real world (medium confidence). These models may warm too rapidly as GHGs increase and aerosols decline

and

over the last two decades the observed rate of increase in GMST has been at the lower end of rates simulated by CMIP5 models.

In other words, the projections of ΔT [temperature change] by the CMIP5 GCMs tend to be too warm based on comparison of observed and modeled ΔT for prior decades (Stott et al. 2013; Gillett et al. 2013). The trapezoid shown in Fig. 2.3 represents an expert judgement of the upper and lower limits for the evolution of ΔT [temperature change] over the next two decades. The vertical bar is the likely mean value of ΔT over the 2016–2035 time period. This projection is meant to apply to all four RCPs: i.e., it considers the full range of possible future values for CO2, CH4, and N2O between present and 2035.

Our analysis of the Paris Climate Agreement will be based on the CMIP5 GCM output as well as calculations conducted using an Empirical Model of Global Climate (EM-GC) developed by our group (Canty et al. 2013). The EM-GC is described in Sect. 2.2. While the EM-GC tool only calculates ΔT, this simple approach is computationally efficient, allowing the uncertainty on [temperature change] ΔT of climatically important factors such as radiative forcing by tropospheric aerosols and ocean heat content to be evaluated in a rigorous manner. We then compare estimates of how much global warming over the 1979–2010 time period can truly be attributed to human activity (Sect. 2.3). Following a brief comment on the so-called global warming hiatus (Sect. 2.4), we turn our attention to projections of ΔT (Sect. 2.5). The green trapezoid in Fig. 2.3 is featured prominently in Sect. 2.5: projections of ΔT found using the EM-GC approach are in remarkably good agreement with this IPCC (2013) expert judgement of ΔT over the next two decades, lending credence to the accuracy of our empirically-based projections.

2.3 Attributable Anthropogenic Warming Rate

The most important metric for a climate model is how well the prior rise in global mean surface temperature can be simulated. The green trapezoid used in various figures throughout this chapter is based on the recognition, by Chap. 11 of IPCC (2013), that CMIP5 GCMs have warmed too aggressively compareΔTd to observations over the prior several decades. In this section, the Empirical Model of Global Climate is used to quantify the amount of global warming that can be attributed to humans, over the time period 1979–2010.23 These years are chosen because the rise in ΔT is nearly linear over this interval and this period has been the basis of similar examination by several other studies (Foster and Rahmstorf 2011; Zhou and Tung 2013). Our analysis of ΔT is compared to simulations of this quantity provided by CMIP5 GCMs, and to other analyses of ΔT over this period of time.

#### Most models estimate warming to be twice as fast as it has actually occurred---feedbacks are dramatically overestimated

Ross J. Salawitch 17, Professor, Department of Atmospheric & Oceanic Science and Department of Chemistry and Biochemistry, University of Maryland, with Timothy P. Canty, Austin P. Hope, Walter R. Tribett, Brian F. Bennett, *Paris Climate Agreement: Beacon of Hope*, 2017, pp. 79-81

[GCMs = Global Climate Model]

Figure 2.13 also contains a graphical representation of AAWR extracted from the 41 GCMs that submitted results for RCP 4.5 to the CMIP5 archive (see Methods for details on how AAWR from GCMs is found). The GCM values of AAWR are displayed using a box and whisker symbol. The middle line represents the median value of AAWR from the GCMs; the box is bounded by the 25th and 75th percentiles, whereas the whisker (vertical line) connects the maximum and minimum values. The median value of AAWR from the CMIP5 GCMs is 0.218 °C/decade, about twice our best estimate of the actual rate of warming caused by human activities. The 25th percentile lies at 0.183 °C/decade, which exceeds the empirically determined upper limit for AAWR of 0.170 °C/decade over the time period 1979– 2010. In other words, the CMIP5 GCMs on average simulate an anthropogenically induced rate of warming that is twice as fast as the actual climate system has warmed and three quarters of the CMIP5 GCMs exhibit warming that exceeds the highest plausible value for AAWR that we infer from the climate record. This is rather disconcerting, given the prominence of the CMIP5 GCMs in the discussion of climate policy (e.g., Rogelj et al. 2016 and references therein).

The most likely reason for the shortcoming of CMIP5 GCMs illustrated in Fig. 2.13 is that climate feedback within these models is too large. Although tabulations of λ from CMIP5 GCMs exist (i.e., Table 9.5 of IPCC 2013), comparison to values of λ found using the EM-GC framework is complicated by the sensitivity of λ to the ΔRF of climate due to aerosols as well as ocean heat export. Most studies of GCM output (Shindell et al. 2013; Andrews et al. 2012; Vial et al. 2013) do not examine all three of these parameters. For meaningful comparison of GCMs to climate feedback from our simulations, it would be particularly helpful if future GCM tabulations of λ provided ΔRF due to aerosols and the ocean heat uptake efficiency coefficient (Raper et al. 2002) that best describes the rise ocean heat content within each GCM simulation. While the discussion of Fig. 9.17 of IPCC (2013) emphasizes good agreement between the observed rise in ocean heat content (OHC) and the CMIP5 multi-model mean rise in OHC since the early 1960s, there is an enormous range in the actual increase of OHC among the 27 CMIP5 GCMs used in their analysis.

Cloud feedback tends to be positive in nearly all GCMs; i.e., simulated changes in the properties and distribution of clouds tends to amplify ΔRF of climate due to rising GHGs (Vial et al. 2013; Zelinka et al. 2013; Zhou et al. 2015).25 Furthermore, GCMs that represent clouds in such a way that they act as a strong positive feedback tend to have larger values of ECS (Vial et al. 2013). It is quite challenging to define cloud feedback from observations because the effect of clouds on ΔRF of climate depends on cloud height, cloud thickness, and radiative effects in two distinct spectral regions.26 To truly discern cloud feedback, the effect of anthropogenic tropospheric aerosols on clouds should be quantified and removed (Peng et al. 2016). The ephemeral nature of clouds requires either a long observing time to discern a signal from an inherently noisy process or the use of seasonal changes to deduce a relation between forcing and response (Dessler 2010). Nonetheless, evidence has emerged that cloud feedback in the actual atmosphere is indeed positive (Weaver et al. 2015; Zhou et al. 2015; Norris et al. 2016). However, the uncertainty in the empirical determination of cloud feedback is quite large (Dessler 2010; Zhou et al. 2015). Furthermore, the vast majority of satellite-based studies of cloud feedback that compare to GCM output make no attempt to quantify the effect of aerosols on clouds, which is problematic given the change in the release of aerosol precursors that has occurred in the past three decades (Smith and Bond 2014) combined with varied representation of the effect of aerosols on clouds within GCMs (Schmidt et al. 2014). There are major efforts underway to evaluate and improve the representation of clouds within GCMs (Webb et al. 2016). Based on the considerable existing uncertainty in the empirical determination of cloud feedback and the wide range of GCM representations of this process, cloud feedback within GCMs is the leading candidate for explaining why most of the GCM-based values of AAWR exceed the empirical determination of AAWR.

### Warming D---AT: Consensus

#### No consensus over causes or what to do---models aren’t accurate enough, data is politicized, and causal evidence is still lacking

Judith Curry 19, President of Climate Forecast Applications Network (CFAN), Professor Emerita of Earth and Atmospheric Sciences at the Georgia Institute of Technology, Ph.D. in atmospheric science from the University of Chicago, 2/9/19, “Statement to the Committee on Natural Resources of the United States House of Representatives,” https://curryja.files.wordpress.com/2019/02/curry-testimony-house-natural-resources.pdf

The climate knowledge gap

Climate scientists have made a forceful argument for a future threat from manmade climate change. Manmade climate change is a theory in which the basic mechanism is well understood, but the potential magnitude is highly uncertain. Scientists agree that surface temperatures have increased overall since 1880, humans are adding carbon dioxide to the atmosphere, and carbon dioxide and other greenhouse gases have a warming effect on the planet.

However, there is considerable disagreement about the most consequential issues: whether the recent warming has been dominated by human causes versus natural variability, how much the planet will warm in the 21st century, whether warming is ‘dangerous’, and whether radically reducing carbon dioxide (CO2) emissions will improve the climate and human well being in the 21st century.

The scientific conflict regarding the theory of manmade climate change is over the level of our ignorance regarding what is unknown about natural climate variability. Why do climate scientists disagree on the relative importance of natural versus manmade climate change? The historical data is sparse and inadequate. There is disagreement about the value of different classes of evidence, notably the value of global climate model simulations and paleoclimate reconstructions from geologic data. There is disagreement about the appropriate logical framework for linking and assessing the evidence in this complex problem.2 Further, politicization of the science and the consensus building process itself can be a source of bias.

Apart from these broad sources of disagreement, there are two sources of misconception and uncertainty that are of particular relevance to climate policy making:

• Projections of 21st century climate change

• Linking extreme weather events to manmade climate change

With regards to projections of 21st century climate change, Sections 11.3.1.1 and 12.2.3 of the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report (AR5) describe uncertainties in the climate model-based projections. Climate models consistently indicate that the mean global temperature of the planet will rise with increasing CO2 emissions. However, these models show systematic errors in the simulated global mean temperature that are similar in magnitude to the size of the historical change we are seeking to understand.3 The likely4 range of estimates of the sensitivity of global warming to doubling of CO2 as reported by the IPCC AR5 varies by a factor of 3, from 1.5 to 4.5 oC.5 Apart from uncertainties in climate model projections that focus primarily on the impact of increases in greenhouse gases, we do not have sufficient understanding to project future solar variations, future volcanic eruptions, and decadal to century variations in ocean circulations. Finally, existing climate models are unable to simulate realistically possible extreme outcomes, such as abrupt climate change or a rapid disintegration of the West Antarctic Ice Sheet. Hence global climate models provide little relevant information regarding very unlikely but potentially catastrophic impacts – whether caused by manmade climate forcing or natural processes or some combination.

Among the greatest concerns about climate change are its impacts on extreme events such floods, droughts, heat waves, wildfires and hurricanes. However, there is little evidence that the recent warming has worsened such events. The IPCC Special Report on Extreme Events6 acknowledges that there is not yet evidence of changes in the global frequency or intensity of hurricanes, droughts, floods or wildfires. The recent Climate Science Special Report from the Fourth National Climate Assessment (NCA4)7 reported the following conclusions abut extreme events and climate change:

• “Recent droughts and associated heat waves have reached record intensity in some regions of the United States; however, the Dust Bowl era of the 1930s remains the benchmark drought and extreme heat event in the historical record.” [Ch. 6]

• “Detectable changes in some classes of flood frequency have occurred in parts of the United States and are a mix of increases and decreases. Extreme precipitation is observed to have generally increased. However, formal attribution approaches have not established a significant connection of increased riverine flooding to human-induced climate change.” [Ch. 8]

• “State-level fire data over the 20th century indicates that area burned in the western United States decreased from 1916 to about 1940, was at low levels until the 1970s, then increased into the more recent period.” [Ch. 8]

• “[T]here is still low confidence that any reported long-term increases in [hurricane] activity are robust, after accounting for past changes in observing capabilities” [Ch 9]

With regards to the perception (and damage statistics) that severe weather events seem more frequent and more severe over the past decade, there are several factors in play. The first is the increasing vulnerability and exposure associated with increasing concentration of wealth in coastal and other disaster-prone regions. The second factor is natural climate variability. Many extreme weather events have documented relationships with natural climate variability; in the U.S., extreme weather events (e.g. droughts, heat waves and hurricanes) were significantly worse in the 1930’s and 1950’s.8

While climate models predict changes in extreme weather events with future warming, the time of emergence of any manmade signal relative to the large natural variability in extreme weather events is not expected to be evident until late in the 21st century, even for the most aggressive scenarios of future warming.

### Warming D---AT: Models

#### IPCC models overestimate warming impacts – don’t assume cascade uncertainty from mixing scenarios

Indur M. Goklany 15, science and technology policy analyst for the United States Department of the Interior, where he holds the position of Assistant Director of Programs, Science and Technology Policy, he was a member of the US delegation that established the IPCC and helped develop its First Assessment Report, he served as a US delegate to the IPCC, and an IPCC reviewer, he is a member of the GWPF’s Academic Advisory Council, November 2015, “Carbon Dioxide the Good News”, http://www.thegwpf.org/content/uploads/2015/10/benefits1.pdf

Chains of models, cascades of uncertainty

The impacts of global warming are generally estimated using chains of linked computer models. Each chain begins with a climate model, which itself is driven by a set of socioeconomic scenarios based on assumptions for population, economic development and technological change over the entire period of the analysis (often 50– 100 years or more). The climate model is followed by various biophysical, economic and other downstream models to estimate changes in different aspects of human activity or welfare, for example agriculture, forestry, health or biodiversity. The uncertain outputs of each upstream model serve as the inputs of the subsequent downstream model, with the uncertainties cascading down the chain so that the individual streams of uncertainty combine into a regular torrent.

For example, to estimate the impacts on agriculture and food security, the outputs of the climate model are fed into various crop models to estimate yields, which then are linked to economic models to estimate supply and demand for the various crops. Supply and demand are then reconciled via national, regional and global scale trade models.142 Notably, despite the cascade of uncertainties, to date no climate change impact assessment has provided an objective estimate of the cumulative uncertainty, starting with the socioeconomic scenarios through to the impact estimate. The ranges of uncertainty presented in the IPCC impact reports are generally based on the uncertainties only from using different climate scenarios. But these are much narrower than the true uncertainties that would have been estimated had the full cascade of uncertainties been considered.

### Warming D---AT: Arctic Ice Melt

#### Arctic ice is rebounding

Michael Bastasch 15, Senior Reporter with The Daily Caller News Foundation, a D.C.-based news organization specializing in policy reporting and investigative journalism, 4/29. “‘Irreversible’ Arctic Ice Loss Seems To Be Reversing Itself.” http://dailycaller.com/2015/04/29/irreversible-arctic-ice-loss-seems-to-be-reversing-itself/#ixzz4LO47rQRG

For years, scientists have been warning the Arctic was in a “death spiral” and could soon be ice-free during the summertime and shrink to unprecedented levels due to man-made global warming. Such ice loss could be “irreversible,” some scientists claimed.

But new research from the Scripps Institution of Oceanography says that predictions of a permanently ice-free Arctic are based on “oversimplified” theories. Scripps researchers, who were co-funded by the Navy, found that the Arctic sea ice may be “substantially more stable than has been suggested in previous idealized modeling studies.”

“We found that two key physical processes, which were often overlooked in previous process models, were actually essential for accurately describing whether sea ice loss is reversible,” Scripps climate scientist Ian Eisenman, co-author of a new study refuting claims the Arctic is in a “death spiral,” said in a statement.

“Our results show that the basis for a sea ice tipping point doesn’t hold up when these additional processes are considered,” echoed Till Wagner, also a Scripps scientist. “In other words, no tipping point is likely to devour what’s left of the Arctic summer sea ice. So if global warming does soon melt all the Arctic sea ice, at least we can expect to get it back if we somehow manage to cool the planet back down again.”

“If the associated parameters are set to values that correspond to the current climate, the ice retreat is reversible and there is no instability when the climate is warmed,” according to Eisenman and Wagner’s study.

Eisenman and Wagner’s study comes after the Arctic hit its lowest maximum sea ice extent on record during February. This was followed by the Arctic having its lowest ice extent for March on record, according to the National Snow and Ice Data Center. Indeed, Arctic sea ice has been declining at a rate of 2.6 percent per decade since 1979.

Scientists and climate pundits have already predicted this year’s Arctic summer sea ice extent will be the lowest on record, following poor winter extent. This has only bolstered claims that the Arctic could soon be ice free.

“Summertime Arctic sea ice is not long for this world,” lamented Joe Romm, a climate scientist and editor for the liberal blog ThinkProgress. “Because of Arctic amplification, the Arctic warms twice as fast (or more) than the Earth as a whole does.”

Romm goes on to cite a February study claiming that Arctic ice is losing its thickness and becoming more susceptible to warmer weather — meaning it’s melting a lot faster. The study, published in the journal The Cryosphere found that “annual mean ice thickness has decreased from 3.59 meters [11.8 feet] in 1975 to 1.25 m [4.1 feet] in 2012, a 65% reduction.”

“The ice is thinning dramatically,” climatologist Ron Lindsay, the study’s lead author, was quoted saying.

It wasn’t long ago that David Barber, Canada’s Research Chair in Arctic System Science at the University of Manitoba, warned there was almost no multi-year ice left in the Northern Hemisphere.

“We are almost out of multiyear sea ice in the northern hemisphere,” he told Canada’s Parliament in 2009. “I’ve never seen anything like this in my 30 years of working in the high Arctic … it was very dramatic.”

Arctic sea ice extent that year was at its third-lowest extent on record, behind 2007 and 2008, and experts were saying there would be no polar ice during the summer by 2030 for the first time in one million years.

“I would argue that, from a practical perspective, we almost have a seasonally ice-free Arctic now, because multiyear sea ice is the barrier to the use and development of the Arctic,” Barber said.

But such predictions have fallen flat, as the Arctic has seen a resurgence of multi-year ice since 2009.

NSIDC and European satellite data show that multi-year sea ice made a big comeback in 2013 and 2014 — increasing from 2.25 to 3.17 million square kilometers during that time and making up 43 percent of the north pole’s ice pack.

In fact, Arctic sea ice extent as a whole seems to be stabilizing despite this year’s record low maximum in February. NSIDC data shows Arctic sea ice extent is currently within the normal range based on the 1981 to 2010 average extent.

“Global sea ice is at a record high, another key indicator that something is working in the opposite direction of what was predicted,” Dr. Benny Peiser, director of the Global Warming Policy Forum, told the U.K. Express in January.

“Most people think the poles are melting… they’re not,” he said. “This is a huge inconvenience that reality is now catching up with climate alarmists, who were predicting that the poles would be melting fairly soon.”

### Warming D---AT: Laundry List

#### No individual risk can be tied to a specific probability or temperature increase, and most climate risks are small modifications to fundamental societal risks that we’ve dealt with for millennia

Their 1AC cards just laundry-list scary things, but most are examples of societal vulnerabilities that warming only marginally alters, the probability of which is unquantifiable

Judith Curry 17, President of Climate Forecast Applications Network (CFAN), previously Professor and Chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology, 1/29/17, “The ‘threat’ of climate change,” https://judithcurry.com/2017/01/29/the-threat-of-climate-change/

I think that use of these words mislead the public debate on climate change — any damages from human caused climate change are not imminent, we cannot quantify the risk owing to deep uncertainties, and any conceivable policy for reducing CO2 emissions will have little impact on the hypothesized damages in the 21st century.

‘Threats’ or ‘reasons for concern’?

I do not question that the possibility of adverse impacts from human caused climate change should be under consideration. However, the human caused impacts of climate change have been overhyped from the beginning — the 1992 UNFCCC treaty on avoiding dangerous human interference on the climate. This implied warming was dangerous before any work had actually been done on this.

Some much needed clarification is presented in a recent article published in Nature: IPCC reasons for concern regarding climate change risks. This article provides a good overview of the current IPCC framework for considering dangerous impacts. A summary of the main concerns:

The reasons for concern (RFCs) reported in AR5 are:

Risks to unique and threatened systems (indicated by RFC1)

Risks associated with extreme weather events (RFC2)

Risks associated with the distribution of impacts (RFC3)

Risks associated with global aggregate impacts (RFC4)

Risks associated with large-scale singular events (RFC5)

The eight overarching key risks are:

Risk of death, injury, ill-health, or disrupted livelihoods in low-lying coastal zones and small island developing states and other small islands due to storm surges, coastal flooding, and sea-level rise.

Risk of severe ill-health and disrupted livelihoods for large urban populations due to inland flooding in some regions.

Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services such as electricity, water supply, and health and emergency services.

Risk of mortality and morbidity during periods of extreme heat, particularly for vulnerable urban populations and those working outdoors in urban or rural areas.

Risk of food insecurity and the breakdown of food systems linked to warming, drought, flooding, and precipitation variability and extremes, particularly for poorer populations in urban and rural settings.

Risk of loss of rural livelihoods and income due to insufficient access to drinking and irrigation water and reduced agricultural productivity, particularly for farmers and pastoralists with minimal capital in semi-arid regions.

Risk of loss of marine and coastal ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for coastal livelihoods, especially for fishing communities in the tropics and the Arctic.

Risk of loss of terrestrial and inland water ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for livelihoods.”

I think that qualitatively, these are the the appropriate risks to consider. Where I don’t find this analysis particularly convincing is their links of ‘undetectable’, ‘moderate’, ‘high’, ‘very high’ to specific levels of temperature increase.

The confounding societal effects on all of these risks are overwhelming, IMO, and very likely to be of greater concern than actual temperature increase. Apart from (vii) and (viii) related to ecosystems, these risks relate to vulnerability of social systems. These vulnerabilities have put societies at risk for extreme weather events throughout recorded history — adding a ‘delta’ to risk from climate change does not change the fundamental underlying societal vulnerabilities to extreme weather events.

The key point IMO is one that I made in a previous post Is climate change a ‘ruin’ problem? The short answer is ‘no’ — even under the most alarming projections, human caused climate change is not an existential threat on the timescale of the 21st century.

### Warming D---AT: Methane Burp

#### No impact to methane release---takes 10,000 years and doesn’t reach the atmosphere

Antoine Crémière et al 16, geochemist for CAGE—Centre for Arctic Gas Hydrate, Environment and Climate, Department of Geology, UiT the Arctic University of Norway, Aivo Lepland, research for CAGE, Shyam Chand, Senior Researcher, Norway Geology Survey, 5-11-16, “Timescales of methane seepage on the Norwegian margin following collapse of the Scandinavian Ice Sheet,” http://www.nature.com/ncomms/2016/160511/ncomms11509/full/ncomms11509.html

We estimate that 10 × 103 – 88 × 103 Tg of methane was stored as gas hydrate in the southwest Barents Sea shelf during the LGM, which is equivalent to 0.6–4.9% of the current total oceanic gas hydrate reservoir63. As our study area only represents ca. 30% of the glaciated Barents Sea shelf and ca. 5% of all glaciated shelves with grounded ice sheets (that is, Norwegian margin, Antarctica and Greenland), it is likely that significant amounts of methane were stored in such shelf settings during the LGM. However, the impact of oceanic gas hydrate dissociation on the climate system is limited by the atmospheric transfer rate of methane, which is a function of timescales of dissociation and release rates at the seafloor, the efficiency of methane oxidizers and bubble dissolution in the water column, and the thickness of the water column. Modelling estimates show that under normal oceanographic conditions, methane released at water depths >200 m would be almost entirely (>80%) consumed during transit towards the sea surface20, and that a catastrophic bubble release is required, to drive transport of methane from deeper waters (>100 m) to the atmosphere20. As water depth in the investigated areas of the Norwegian and Barents Sea was on the order of 200–400 m after ice sheet collapse, the resulting impact on atmospheric methane concentrations was probably muted. Furthermore, methane release at the sediment–water interface was also probably modulated by the availability of excess methane and fluid pathways to the seafloor, with slower transit through the sediment column increasing the magnitude of microbial methane consumption within the sedimentary sulphate methane transition zone. Assuming that 90% of the methane released by gas hydrate dissociation is consumed by AOM11, and that 1–5% of it would pass through the water column and reach the atmosphere, the mean integrated flux to the atmosphere in the southwest Barents Sea over 10 kyr would be about 0.0005–0.0172 Tg·per year (minimum and maximum estimates) of methane, which is relatively small when compared with the ~200 Tg·per year methane flux from all natural sources64. Such a scenario of protracted, relatively low-intensity methane efflux in response to abrupt environmental changes has rarely been evaluated by studies that postulate linkages between gas hydrate dissociation and transfer of methane to the marine realm/atmosphere. However, on shallow continental shelf regions (that is, <150–200 m water depth) that have also experienced glacial–interglacial cycles, it is plausible that a higher proportion of the methane released by gas hydrate dissociation may have passed through the water column and reached the atmosphere.

The main episode of carbonate crust formation in the Barents Sea after the collapse of the SIS broadly overlaps with elevated atmospheric methane concentrations as recorded by ice cores from Greenland and Antarctica65. The potential importance of gas hydrate destabilization due to warming of upper oceanic water masses as a cause for elevated atmospheric methane has been debated in several publications4, 10. The hydrogen isotope and 14C characteristics of methane trapped in ice cores suggest insignificant emissions from marine gas hydrates during times of high atmospheric methane after deglaciation and stability of gas hydrates14, 66. However, the general inference of gas hydrate stability within continental margin sediments through glacial–interglacial cycles is not globally applicable, as it is dependent on local changes in temperature and hydrostatic pressure. This is particularly important in case of glaciated continental margins where gas hydrate destabilization was triggered by local reduction in pressure effects of collapsing grounded ice sheets. Reliable assessment of the influence of hydrate-released methane from glaciated margins on the climate system after the LGM requires global quantification of methane storage, release and consumption budgets, constraints of timescales of hydrate dissociation, and temporal and volume estimates of the dynamics of ice sheets. Such global data are not currently available. Abrupt, globally synchronous methane release over a timescale of 102 years from deglaciated shelf areas with grounded ice appears unlikely given the protracted nature of hydrate-derived methane efflux after the LGM, as our findings from the southwest Barents Sea indicate, as well as the asynchronous deglaciation of different shelf areas.

The analysis of methane-derived authigenic carbonate through the integration of U-Th geochronology and geochemical proxies, combined with gas hydrate modelling provides a means for evaluating past methane release from glaciated continental margins where gas hydrate dynamics are governed by glacial–interglacial cycles. Modelling results demonstrate that gas hydrate accumulation beneath grounded ice-sheets on the Norwegian margin, in a setting analogous to the present day Antarctic shelf16, generates potentially significant methane reservoirs the stability of which is sensitive to environmental changes affecting local pressure and temperature regimes. Although significant amounts of methane could have been released at the seafloor and transferred to the water column, U-Th geochronology suggests methane release over a ca. 10 kyr [10,000 year] interval implying that flux rates were modulated by the second-order processes controlling both the rate of dissociation (isostatic rebound and bottom water warming), fluid transport (changes in stress fields leading to fault reactivation under the control of isostatic rebound) and consumption (via efficiency of microbial oxidation). Overall, the protracted nature of methane release on the Norwegian margin and its minimal impact on atmospheric methane concentrations highlight the complexity of the gas hydrate system and the importance of mechanisms mediating gas hydrate dissociation and fluid advection in response to abrupt climatic change.

### Warming D---AT: Ocean Acidification---1NC

#### No impact, a litany of alt causes, and their ev cherry-picks worst-case-scenario studies

Webster 16 (Ben, Environmental Editor for the London Times, “Scientists are ‘exaggerating carbon threat to reefs and marine life’”, http://www.theaustralian.com.au/news/world/the-times/scientists-are-exaggerating-carbon-threat-to-reefs-and-marine-life/news-story/d41370fc3ecbcbacaf18b1cff0cb2e4a)

Claims that coral reefs are doomed because human emissions are making the oceans more acidic have been exaggerated, a review of the science has found. An “inherent bias” in scientific journals in favour of more calamitous predictions has excluded research showing that marine creatures are not damaged by ocean acidification, which is caused by the sea absorbing carbon dioxide from the atmosphere. It has been dubbed the “evil twin of climate change” and hundreds of studies have claimed to show that it destroys coral reefs and other marine life by making it harder for them to develop shells or skeletons. The review found that many studies had used flawed methods, subjecting marine creatures to sudden increases in carbon dioxide that would never be experienced in real life. “In some cases it was levels far beyond what would ever be reached even if we burnt every molecule of carbon on the planet,” Howard Browman, the editor of ICES Journal of Marine Science, who oversaw the review, said. He added that this had distracted attention from more urgent threats to reefs such as agricultural pollution, overfishing and tourism. Dr Browman, who is also principal research scientist at the Norwegian Institute of Marine Research, found there had been huge increase in articles on ocean acidification in recent years, rising from five in 2005 to 600 last year. He said that a handful of influential scientific journals and lobbying by international organisations had turned ocean acidification into a major issue. “Such journals tend to publish doom and gloom stories ... stated without equivocation,” he said. The bias in favour of doom-laden articles was partly the result of pressure on scientists to produce eye-catching work, he added. “You won’t get a job unless you publish an article that is viewed as of significant importance to society. People often forget that scientists are people and have the same pressures on them and the same kind of human foibles. Some are driven by different things. They want to be prominent.” Dr Browman invited scientists around the world to contribute studies on ocean acidification for a special edition of his journal. More than half of the 44 studies selected for publication found that raised levels of CO2 had little or no impact on marine life, including crabs, limpets, sea urchins and sponges. Dr Browman said that the edition had demonstrated that there was “a body of work out there that people had difficulty publishing elsewhere” and that “not every study shows that Nemo is going to be doomed”, a reference to the reef-dwelling clownfish in the Disney film Finding Nemo. The term ocean acidification was also a misnomer, he said, because it suggested that the oceans could become acidic instead of alkaline. “The oceans will never become acid because there is such a huge buffering capacity in the oceans. We simply could never release enough CO2 into the atmosphere to cause the pH to go below 7 [the point in the pH scale at which a solution becomes acidic]. “If they had called it something else, such as ‘lower alkalinity’, it wouldn’t have been as catchy,” he said. Dr Browman, a marine scientist for 35 years, said he was not saying that ocean acidification posed no threat, but that he believed that “a higher level of academic scepticism” should be applied to the topic.

### Warming D---AT: Ocean Acidification---2NC

#### No ocean acidification impact---their evidence assumes far higher CO2 levels than we’ll ever reach, adaptation solves, and research is systemically biased toward alarmism

Howard I. Browman 16, Institute of Marine Research, Marine Ecosystem Acoustics Disciplinary Group, Austevoll Research Station, Norway, “Applying organized scepticism to ocean acidification research,” *ICES Journal of Marine Science*, Volume 73, Number 3, February/March 2016, pp. 529-536

[OA = Ocean Acidification]

The first articles on OA were descriptions of the process itself (CO2-driven changes in the biogeochemistry of seawater and sediments) and its implications. This was followed by an explosion of work (mainly laboratory-based) on the possible effects of OA on various marine organisms, at first mainly calcifiers or the calcified hard parts of organisms without calcarious shells. These were mostly restricted to part of one generation (a limited number of life history stages), or at most a single complete life cycle, with one or a small number of biological endpoints measured as effect indicators. In early work, treatment exposure levels often greatly exceeded those predicted to occur hundreds of years into the future even without any reduction in CO2 emissions. The majority of these early works reported significant negative effects of high CO2, from which it was inferred that there would be a detrimental effect of OA over the coming decades–centuries. Thereafter, longer-term effect studies began to appear, which first included single-generation carry-overs and then multiple generations. By necessity, these have been on organisms with short generation times. As the approach to CO2 exposures matured, very high treatment levels became less common. More studies that showed no effect of high CO2 (predicted for the next century)—and even beneficial effects (e.g. for some phytoplankton and macrophytes)—appeared. Upwelling and vent systems were used as in situ case studies of natural future OA-like conditions. Some in situ work mimics such systems by injecting CO2 and following the response of organisms/communities locally. Results of experiments that included multiple stressors in addition to CO2 were published. The most common of these has been temperature, but salinity, oxygen, and a variety of others have also been included (in a global climate change context). Such studies typically report that the additional driver(s) has a stronger effect than CO2, although it is difficult to isolate the effect of the individual variables. The reality that the functional response curve of each driver will likely differ, as will the organism's ability to adapt to them, further complicates interpretations of multiple driver experiments. Studies on the effect of CO2 on trophic interactions (indirect effects) are sparse—such experiments are logistically complex and difficult to interpret. A small number of recent studies integrate the results of the preceding body of work into risk assessments and scenario modelling, typically on economically important species of fish and shellfish; most conclude that the prognosis is dire, although in the context of what follows, that conclusion might be premature.

The preceding describes how OA research has matured. The following describes how it still has a way to go.

Applying organized scepticism to research on the effects of OA

Scientific or academic scepticism calls for critical scrutiny of research outputs before they are accepted as new knowledge (Merton, 1973). Duarte et al. (2014) stated that “…there is a perception that scientific skepticism has been abandoned or relaxed in many areas…” of marine science. They argue that OA is one such area, and conclude that there is, at best, weak evidence to support an OA-driven decline of calcifiers. Below, I raise some of the aspects of OA research to which I contend an insufficient level of organized scepticism has been applied (in some cases, also to the articles in this theme issue). I arrived at that conclusion after reading hundreds of articles on OA (including, to be fair, some that also raise these issues) and overseeing the peer-review process for the very large number of submissions to this themed issue. Importantly, and as Duarte et al. (2014) make clear, a retrospective application of scientific scepticism such as the one that follows could—and should—be applied to any piece of/body of research.

Exposure levels, water chemistry, and limits to making inferences about the effect of a long-term driver from a short-term experiment

Many early studies on OA applied treatment levels that greatly exceeded even worst-case climate change scenarios and did not report water chemistry in sufficient detail to determine if the treatment mimicked future OA-driven seawater conditions. Although most recent work has improved with respect to treatment levels, mimicking future water chemistry remains tricky.

A rationale commonly used to justify high CO2/low pH treatments is the need to identify at what levels organisms are affected. However, the limits to making inferences about how an organism or ecosystem will respond to a climate-change scale variable (i.e. one that changes over decades–centuries) from their response during a short-term challenge experiment (i.e. hours–days–weeks) has not been adequately addressed—or even mentioned—in most studies. This is reflected in a confusion of terms common in OA studies—when describing the outcome of a short-term CO2 challenge, authors often make the inferential leap and use “OA” when discussing their results, without any caveats. Oddly, incorporation of the extensive toxicology literature is almost entirely missing from OA studies, either when it comes to adopting established exposure protocols or to framing the inferences that can/cannot be drawn from short-term experiments. Also missing from most studies is anything more than a superficial statement about the possibility for acclimation, adaptation, or evolution, something that is necessary to extend the outcome of a short-term challenge experiment into an inference about the effect of a long-term driver (see below).

Spatio-temporal variability in CO2 and pH

Biogeochemists are well aware of the spatio-temporal variability in CO2 and pH—daily (high productivity areas), seasonal (blooms), interannual (higher temperatures), horizontal (coastal upwelling areas, high turbidity zones), and vertical (deep vs. surface waters) ranges in these can be extensive (e.g. Wootton et al., 2008; Hofmann et al., 2011; Waldbusser and Salisbury, 2014; Kapsenberg et al., 2015). Biologists have struggled to incorporate this variability into experiments designed to test the effects of OA, and into their interpretations of the outcomes (Eriander et al., 2016). Some researchers have pointed out that organisms that are exposed to large ranges in CO2 and pH during their daily lives (e.g. vertical migrators), life cycles (e.g. organisms that reside offshore as larvae but move to the coast as juveniles or adults), or somewhere in their distributional ranges, should be more tolerant of OA (e.g. Lewis et al., 2013).

Imbalanced focus on individuals that are affected and insufficient focus on inter-individual variability and within-experiment selection bias interpretations of ecological impacts

Almost all CO2 challenge experiments produce a range of responses in the test organism—some individuals are badly affected, others less, and some not at all. There are several issues associated with all such experiments that it is important to be cognizant of and account for: (i) analyses and interpretations should not ignore or minimize individuals that are little affected or unaffected (after all, these are the ones whose genes will be passed on to the next generation); (ii) inter-individual variability should be highlighted; (iii) the longer that the experiment runs the more likely it is that an internal selection process for the tolerant individuals has occurred. All of these are important in the context of the next section.

Acclimation, generational carry-over effects, adaptation, epigenetics, and evolution

Almost all experiments conducted to assess OA are short-term toxicity challenges. Therefore, using them as the basis from which to make inferences about a process that will occur slowly over the next decades–centuries must be made with appropriate caution. That is, the experiments and the interpretations made from them must consider how populations might acclimatize, adapt, and evolve to climate change, including OA (e.g. Donelson et al., 2011; Hoffmann and Sgrò, 2011; Sunday et al., 2013; Harvey et al., 2014). Recent studies indicate that even the effects of OA that are considered most worrisome—various behavioural impairments resulting from short-term exposure to high CO2 (see Nagelkerken and Munday, 2016)—might be reduced or overcome through adaptation and evolution (Regan et al., 2016). More knowledge of the mechanisms of direct action of OA-related drivers—higher concentrations of CO2, hydrogen ions (=lower pH), and/or carbonate chemistry (less carbonate ions)—and of indirect drivers such as the effects of OA on food quality, are essential to understand what degree of adaption is possible. Readers should be duly sceptical of studies that completely ignore the possibility of adaptation when presenting their inferences about OA, particularly scenario modelling of socio-economic impacts.

We must also do better to incorporate analogous work in other fields, for example, rapid evolution of tolerance to envirotoxins (e.g. Whitehead et al., 2012) and environmental change (e.g. Collins et al., 2014; Stoks et al., 2015; Thibodeau et al., 2015) via a combination of genetic and epigenetic mechanisms (Yona et al., 2015).

Publication bias

Negative results—those that do not support a research hypothesis (e.g. OA will have detrimental effects on marine organisms)—can provide more balance for a subject area for which most published research reports positive results. Negative results can indicate that a subject area is not mature or clearly enough defined, or that our current methods and approaches are insufficient to produce a definitive result. Gould (1993) asserted that positive results tell more interesting stories than negative results and are, therefore, easier to write about and more interesting to read. He calls this a privileging of the positive. This privileging leads to a bias that acts against the propagation of negative results in the scholarly literature (see also Browman, 1999). Further, it is also important to recognize that studies showing no effect of OA are less equivocal than those that do, for all of the reasons noted above. Following from this, it is essential that authors writing about possible effects of OA present and discuss research that is inconsistent with their results and/or their interpretations—openly, honestly, and rigorously. Readers should be duly sceptical of articles that do not do this.

#### No impact to ocean acidification from AGW in this century – adaptation, resiliency and alt causes

Indur M. Goklany 15, science and technology policy analyst for the United States Department of the Interior, where he holds the position of Assistant Director of Programs, Science and Technology Policy, he was a member of the US delegation that established the IPCC and helped develop its First Assessment Report, he served as a US delegate to the IPCC, and an IPCC reviewer, he is a member of the GWPF’s Academic Advisory Council, November 2015, “Carbon Dioxide the Good News”, http://www.thegwpf.org/content/uploads/2015/10/benefits1.pdf

Recent laboratory experiments to investigate the variation in the coral calcification rate of the scleractinian coral Siderastrea siderea - an abundant reef-builder in the Caribbean Sea - with warming and changes in pH found that under a more-or less constant temperature of 28.C, calcification rates increased as atmospheric carbon dioxide was increased from near-pre-industrial levels of 324 ppm to 447 ppm, remained relatively unchanged at the predicted end-of-century value of 604 ppm and then returned to near-pre-industrial rates at 2500 ppm.105 It also found that while holding the carbon dioxide level at 488 ppm, calcification rates increased as the temperature increased from 25.C to 28.C, but it declined by 80% when temperature was increased to 32.C. These results suggest that rapid ocean warming will pose a threat to S. siderea in the longer term but that ocean acidification will be little or no threat for several centuries. Moreover, the experimentally determined calcification rates might have been adversely affected by the disruption to the coral due to the need to cut, transplant and prepare it for analysis. No less important is the fact that the changes in pH and temperature were imposed over a period of just a few months. In the real world such changes would occur over a century or more, which means some adaptation cannot be precluded, for example via symbiont shuffling.106¶ By far the largest peer-reviewed-analysis of the effect of ocean acidification upon marine life came to a strikingly unfashionable conclusion. Hendriks et al. studied the results of 372 experiments involving raised carbon dioxide levels on 44 species and found ‘limited experimental support’ for the theoretical predictions of negative impacts of ocean acidification. Marine organisms, they conclude, are ‘more resistant to ocean acidification than suggested by pessimistic predictions...’, and thus this phenomenon ‘may not be the widespread problem conjured into the 21st century’.107¶ Although some corals are growing more rapidly because of increases in calcification rates perhaps due to, rather than despite, higher sea surface temperatures108 and, possibly, higher carbon dioxide levels, in other areas they are being lost or degraded. The primary causes for the loss, however, are overfishing, pollution, coastal development, and dredging and blasting rather than manmade global warming. 109,110

#### Three reasons why this isn’t an impact – empirics, resilience, and proven adaptation

Moore 15 (Dr. Patrick, former leader of Greenpeace; Chairman of Ecology, Energy and Prosperity with Canada’s Frontier Centre for Public Policy, Ph.D. in Ecology, University of British Columbia, “Why Coral Reefs and Shellfish Will Not Die From ‘Ocean Acidification’”, http://news.heartland.org/editorial/2015/05/27/why-coral-reefs-and-shellfish-will-not-die-ocean-acidification)

The hypothesis that “ocean acidification” will kill corals and shellfish due to higher levels of carbon dioxide dissolved in the sea is often used to stoke fear in the hearts of nature lovers. Here’s why I don’t believe there is a shred of evidence to support these claims. When the slight global warming that occurred between 1970 and 2000 came to a virtual standstill, the doomsayers adopted “climate change”, which apparently means all extreme weather events are caused by human emissions of CO2. Cold, hot, wet, dry, wind, snow and large hailstones are attributed to humanity’s profligate use of fossil fuels. But the pause in global warming kept on and became embarrassing around 2005. Something dire was needed to prop up the climate disruption narrative. “Ocean acidification” was invented to provide yet another apocalyptic scenario, only this one required no warming or severe weather, just more CO2 in the atmosphere. The story goes that as CO2 increases in the atmosphere the oceans will absorb more of it and this will cause them to become acidic — well, not exactly, but at least to become less basic. This in turn is predicted to dissolve the coral reefs and kill the oysters, clams, mussels and algae that have calcareous shells. It was named “global warming’s evil twin”. Seawater in the open ocean is typically at a pH of 8.0-8.5 on a scale of 0-14, where 0 is the most acidic, 14 is most basic and 7 is neutral. Ocean acidification from increased CO2 is predicted to make the ocean less basic, perhaps to pH 7.5 under so-called worst-case projections. How do I know that increased CO2 will not kill the coral reefs and shellfish? Let me count the ways. First, contrary to popular ­belief, at 400 parts per million (0.04 per cent), CO2 is lower now in the atmosphere than it has been during most of the 550 million years since modern life forms emerged during the Cambrian period. CO2 was about 10 times higher then than it is today. Corals and shellfish evolved early and have obviously managed to survive through eras of much higher CO2 than present levels. This alone should negate the “predictions” of species extinction from CO2 levels nowhere near the historical maximum. Second, due to its high concentration of basic elements such as calcium and magnesium, sea­water has a powerful buffering capacity to prevent large swings in pH due to the addition of CO2.This self-correcting capacity of seawater will ensure the pH will remain well within levels conducive to calcification, the process whereby shells and coral structures are formed. Marine shells are largely made of calcium carbonate, the carbon of which is derived from the CO2 dissolved in the seawater. Third, and most interesting, there are freshwater species of clams and mussels that manage to produce calcareous shells at pH 4-5, well into the acidic range. They are able to do this because a mucous layer on their shell allows them to control the pH near the surface and to make calcification possible beneath the mucous layer. The “ocean acidification” story depends only on a chemical hypothesis whereas biological factors can overcome this and create conditions that allow calcification to continue. This is corroborated by the historical record of millions of years of success in much higher CO2 environments.

### Warming D---AT: Ocean Acidification---No Impact

#### No ocean acidification impact

Rud Istvan 18, Harvard University MBA and JD in economics summa cum laude, former chairman and CEO of Third Stream Bio science INC, 12/23/18, “Ocean Acidification Background Context”, https://wattsupwiththat.com/2018/12/23/ocean-acidification-background-context/

But for two reasons, Station Aloha cannot be linearly extrapolated into the future as IPCC AR4 erroneously did. First and foremost, ocean pH is not a linear chemical system driven only by Henry’s law; it is a system highly buffered by dissolved minerals and seafloor carbonates. Taking seawater chemical buffering into account, IPCC AR5 3.8.2 suggested that doubled atmospheric CO2 might cause surface pH to decline by Δ0.15-0.2, less than half of AR4. This is well within the normal diurnal and seasonal biological seawater pH variation for almost all ocean waters. It is no cause for the alarms sounded by the Seattle Times series Sea Change.

Ocean surface pH is not uniform. It varies diurnally, seasonally, by ecosystem, and by underlying ocean depth. At the deep ocean and biologically barren PMEL Station Aloha site north of tropical Hawaii, seasonal surface variation is only Δ0.1 pH. Moderately fertile Southern Ocean surface seasonality is Δ0.5 pH. Seasonal surface variation is as high as biologically fertile Δ1.43 pH depending on which of and where the Pacific’s 8 biological marine ecosystems are evaluated.[i]

How marine creatures do under experimental aquarium conditions of roughly doubled CO2 (with food, light, and temperature held constant) depends on species. [ii] Crustaceans, temperate urchins, calcifying (coralline) algae, limpets, and mussels do well. Oysters, conch, bay scallops, and some tropical corals don’t. But aquariums do not reflect the important interplay of many other ecosystem factors also affecting these creatures.

For a specific example, Florida Bay conchs thrive amidst complex interactions between seasonal pH and salinity that drive extreme pH swings, even though Woods Hole aquarium studies suggest they should not. The Everglades mangrove fringe in Florida Bay has a low salinity winter pH 5.8 yet serves as a crucial ‘predator safe’ nursery ecosystem for many Florida Bay marine species. Yet toward Key West (the ‘Conch Republic’) pH peaks as high as 9.8 during sunny summer days with elevated (from evaporation) salinity.[iii] The maximum geographic separation is just 90 miles, the average only 25 miles. Such extreme pH changes come from Thallassia sea grass photosynthesis consuming dissolved CO2, plus evaporative high salinity (>50ppt) driving calcium carbonate precipitation. Florida Bay demonstrates the enormous variability and resilience of actual marine ecosystem biodiversity.

### Warming D---AT: Sea Levels

#### Sea level rise is slow and not catastrophic

Michael Shellenberger 19, Founder and President of Environmental Progress, Time Magazine “Hero of the Environment” and Green Book Award Winner, “Why Apocalyptic Claims About Climate Change Are Wrong”, Forbes, 11/25/2019, https://www.forbes.com/sites/michaelshellenberger/2019/11/25/why-everything-they-say-about-climate-change-is-wrong/#3c1f50c12d6a

Few have underscored the threat more than student climate activist Greta Thunberg and Green New Deal sponsor Rep. Alexandria Ocasio-Cortez. The latter said, “The world is going to end in 12 years if we don't address climate change.” Says Thunberg in her new book, “Around 2030 we will be in a position to set off an irreversible chain reaction beyond human control that will lead to the end of our civilization as we know it.”

Sometimes, scientists themselves make apocalyptic claims. “It’s difficult to see how we could accommodate a billion people or even half of that,” if Earth warms four degrees, said one earlier this year. “The potential for multi-breadbasket failure is increasing,” said another. If sea levels rise as much as the Intergovernmental Panel on Climate Change predicts, another scientist said, “It will be an unmanageable problem.”

Apocalyptic statements like these have real-world impacts. In September, a group of British psychologists said children are increasingly suffering from anxiety from the frightening discourse around climate change. In October, an activist with Extinction Rebellion (”XR”) — an environmental group founded in 2018 to commit civil disobedience to draw awareness to the threat its founders and supporters say climate change poses to human existence — and a videographer, were kicked and beaten in a London Tube station by angry commuters. And last week, an XR co-founder said a genocide like the Holocaust was “happening again, on a far greater scale, and in plain sight” from climate change.

Climate change is an issue I care passionately about and have dedicated a significant portion of my life to addressing. I have been politically active on the issue for over 20 years and have researched and written about it for 17 years. Over the last four years, my organization, Environmental Progress, has worked with some of the world’s leading climate scientists to prevent carbon emissions from rising. So far, we’ve helped prevent emissions increasing the equivalent of adding 24 million cars to the road.

I also care about getting the facts and science right and have in recent months corrected inaccurate and apocalyptic news media coverage of fires in the Amazon and fires in California, both of which have been improperly presented as resulting primarily from climate change.

Journalists and activists alike have an obligation to describe environmental problems honestly and accurately, even if they fear doing so will reduce their news value or salience with the public. There is good evidence that the catastrophist framing of climate change is self-defeating because it alienates and polarizes many people. And exaggerating climate change risks distracting us from other important issues including ones we might have more near-term control over.

I feel the need to say this up-front because I want the issues I’m about to raise to be taken seriously and not dismissed by those who label as “climate deniers” or “climate delayers” anyone who pushes back against exaggeration.

With that out of the way, let’s look whether the science supports what’s being said.

First, no credible scientific body has ever said climate change threatens the collapse of civilization much less the extinction of the human species. “‘Our children are going to die in the next 10 to 20 years.’ What’s the scientific basis for these claims?” BBC’s Andrew Neil asked a visibly uncomfortable XR spokesperson last month.

“These claims have been disputed, admittedly,” she said. “There are some scientists who are agreeing and some who are saying it’s not true. But the overall issue is that these deaths are going to happen.”

“But most scientists don’t agree with this,” said Neil. “I looked through IPCC reports and see no reference to billions of people going to die, or children in 20 years. How would they die?”

“Mass migration around the world already taking place due to prolonged drought in countries, particularly in South Asia. There are wildfires in Indonesia, the Amazon rainforest, Siberia, the Arctic,” she said.

But in saying so, the XR spokesperson had grossly misrepresented the science. “There is robust evidence of disasters displacing people worldwide,” notes IPCC, “but limited evidence that climate change or sea-level rise is the direct cause”

What about “mass migration”? “The majority of resultant population movements tend to occur within the borders of affected countries," says IPCC.

It’s not like climate doesn’t matter. It’s that climate change is outweighed by other factors. Earlier this year, researchers found that climate “has affected organized armed conflict within countries. However, other drivers, such as low socioeconomic development and low capabilities of the state, are judged to be substantially more influential.”

Last January, after climate scientists criticized Rep. Ocasio-Cortez for saying the world would end in 12 years, her spokesperson said "We can quibble about the phraseology, whether it's existential or cataclysmic.” He added, “We're seeing lots of [climate change-related] problems that are already impacting lives."

That last part may be true, but it’s also true that economic development has made us less vulnerable, which is why there was a 99.7% decline in the death toll from natural disasters since its peak in 1931.

In 1931, 3.7 million people died from natural disasters. In 2018, just 11,000 did. And that decline occurred over a period when the global population quadrupled.

What about sea level rise? IPCC estimates sea level could rise two feet (0.6 meters) by 2100. Does that sound apocalyptic or even “unmanageable”?

Consider that one-third of the Netherlands is below sea level, and some areas are seven meters below sea level. You might object that Netherlands is rich while Bangladesh is poor. But the Netherlands adapted to living below sea level 400 years ago. Technology has improved a bit since then.

What about claims of crop failure, famine, and mass death? That’s science fiction, not science. Humans today produce enough food for 10 billion people, or 25% more than we need, and scientific bodies predict increases in that share, not declines.

### Warming D---AT: Sea Levels---2NC

#### Sea level rise is slow and not catastrophic---no scientific body has ever said it could cause extinction: even the IPCC doesn’t think it’ll be catastrophic. Rise by 2100 can be adapted to, especially with evolving tech---that’s Shellenberger.

#### It’ll rise 1 yard, max over the next 80 years---that has no impact

Vanessa Schipani 18, PhD Candidate in Philosophy from the University of Pennsylvania, M.S. in History and Philosophy of Science from Utrecht University, B.S. in Zoology from the University of Florida, “Stein Over the Top on Sea Level Rise”, FactCheck, 8/26/2018, https://www.factcheck.org/2016/08/stein-over-the-top-on-sea-level-rise/

However, reports by the Intergovernmental Panel on Climate Change and the U.S. Global Change Research Program, which are both collaborations of hundreds of scientists, project a much smaller rise over a longer period than Hansen.

The 2013 IPCC report predicts an average rise of between 0.26 to 0.98 meters (1 meter = 1.09 yards) in the global sea level by 2100, with the higher end entailing a high greenhouse gas emissions scenario.

The 2016 Global Change report similarly projects a 1 to 4 feet (3 feet = 1 yard) rise by 2100. However, the report also states, “In the context of risk-based analysis, some decision makers may wish to use a wider range of scenarios, from 8 inches to 6.6 feet by 2100.” Still, 6.6 feet translates to 2.2 yards, which is not “many” yards, and it also would not occur in “as soon as 50 years.”

In his paper, Hansen and colleagues argue that ice covering the North and South poles will melt at rates much faster than predicted by the IPCC and others. Instead of a linear rate, the researchers argue the rate will grow exponentially, doubling every 10, 20 or 40 years. This will lead to “multi-meter” global mean sea level rise in about 50, 100 or 200 years, respectively, the authors conclude.

But the group also admits that, while the data they analyzed are “consistent with” a multi-meter sea level rise in around 50 years, they “cannot exclude slower responses.” This is why the researchers give a timescale of 50 to 150 years to reach several meters of sea level rise.

In an email to us, Hansen also explained, “If we stay on business-as-usual high emissions, I would say that several meters [of sea level rise] is unlikely in 50 years, though possible. In 100 years it is likely, and I can’t see how it could be avoided in 200 years.”

But back in March, Michael Mann, director of the Earth System Science Center at Penn State University and a lead author on a chapter of the IPCC’s third report, told The Guardian: “I’m always hesitant to ignore the findings and warnings of James Hansen; he has proven to be so very prescient when it comes to his early prediction about global warming. That having been said, I’m unconvinced that we could see melting rates over the next few decades anywhere near his exponential predictions, and everything else is contingent upon those melting rates being reasonable.”

In 1988, Hansen, then a NASA scientist, testified before Congress on the dangers of global warming. His testimony instigated broader awareness of the issue, which has led some to call him the “father of climate change awareness.”

Steven Goodbred Jr., an environmental scientist at Vanderbilt University and expert on sea level rise in Bangladesh, agrees with Mann that Hansen’s warnings should be heeded, but also said Hansen’s latest findings are over the top. “Meters of sea level rise would require major collapse of Greenland or East Antarctic ice sheets,” Goodbred told us by email. “While improbable, the evidence that Hansen et al put forth warns us not to think impossible.”

Not as Simple as Sea Level Rise

Goodbred also told us issues in Bangladesh, which Stein mentioned specifically, can’t be boiled down to sea level rise. The Ganges and Brahmaputra rivers, which flow from China and India to Bangladesh, together “deliver the largest sediment load on earth” at around 1 billion metric tons per year, he explained. “That sediment distributed across Bangladesh’s low-lying coastal region could keep pace” with the current rate of sea level rise, “perhaps with relatively limited consequences (though certainly not none).”

Along these lines, “any reduction in that supply would harm the system’s ability to respond to sea level rise,” added Goodbred. “Threats to sediment delivery (that are more probable than Hansen et al scenarios) include dam construction, water diversion, and increased irrigation/water extraction in upstream areas of India and China.” Many of these modifications to the river systems are already planned or ongoing, he said, and represent as much of a threat to Bangladesh as sea level rise does.

Mann told us the situation in Florida and Manhattan, which Stein also pointed to specifically, can’t be reduced to sea level rise either. “Even 5-6 m of sea level rise would not submerge New York City, or most of Florida,” he said.

“Due to the threat to our coastlines from the combined effect of sea level rise and potentially more potent hurricanes, we might indeed be looking at managed retreat from coastal regions like Miami and New York City on a timeframe of 50 years,” he added. “But it wouldn’t be because of inundation of these regions. It would be because the cost to insure property would become prohibitive given the greatly increased coastal risk.”

In other words, Miami and Manhattan probably won’t be completely underwater in 50 years, but it may become too expensive for many to live there due to increased property insurance costs.

Stein was on the mark when she said warmer air, which can hold more water, has the potential to bring about more extreme weather events, such as the one in Louisiana.

But her claim that global warming would cause sea levels to rise on average “not one yard but many yards” in as soon as 50 years is “an example of a greatly exaggerated version of reality that has a kernel of truth to it,” Mann told us.

Current scientific consensus puts the likely global mean sea level rise at a maximum 1.33 yards above current levels by 2100. And for Manhattan, Florida and Bangladesh in particular, issues go above and beyond sea level rise.

#### Their ev is based on computer models that are invalid and conflict with actual measured data

Larry Hamlin 19, Former California State Energy Construction Czar for Governor Davis, Former Vice President of Power Production at Southern California Edison, “CA Sea Level Rise Alarmist Study Ignores 30 Years Of NOAA Data With No Coastal Sea Level Rise Acceleration”, Watts Up With That?, 3/13/2019, https://wattsupwiththat.com/2019/03/13/ca-sea-level-rise-alarmist-study-ignores-30-years-of-noaa-data-with-no-coastal-sea-level-rise-acceleration/

Climate alarmists and their supporting media conveniently conceal the fact that their flawed claims have been hyped for the last 30 years as they continue to try again and again to make the same repeated but flawed claims apparently hoping that the public will forget their long track record of failure and exaggeration.

NOAA measured tide gauge data shows that coastal sea level rise at Ca. locations varies between 3 to 12 inches per century and have remained at those levels during the long measurement periods during which actual measured data have been recorded with a sample of that measured data shown below for San Diego, La Jolla, Los Angeles and San Francisco.

The recent climate alarmist propaganda study hyped by the media speculating that CA coastal sea level rise levels of 1 to 2 meters (about 3 to 6 feet) by 2100 “could” occur along with associated grossly exaggerated damage estimates are based solely on invalid “computer models” which ignore the extensive measured NOAA tide gauge data which shows that 30 year old climate alarmist claims of accelerating coastal sea level rise are unsupported by actual measured data.

The UN IPCC clearly established in its 3rd Annual Climate Report in 2001 that it is impossible to develop computer models that represent the earth’s climate because climate behavior is too difficult and complex for such models.

Specifically the UN IPCC concluded the following with respect to the ability to develop valid climate models:

“In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that the long term prediction of future climate states is not possible.”

The politically driven world of climate alarmism propaganda claims such as those represented in this most recent hyped CA alarmist study always rely upon the speculation and conjecture derived from invalid “computer models” with their results cloaked with words like “could” and “might” to avoid having to specifically address the huge limitations of such models.

#### Best research shows ice is stable---no tipping points or collapse

Michael Bastasch 15, Senior Reporter with The Daily Caller News Foundation, a D.C.-based news organization specializing in policy reporting and investigative journalism, 4/29. “‘Irreversible’ Arctic Ice Loss Seems To Be Reversing Itself.” http://dailycaller.com/2015/04/29/irreversible-arctic-ice-loss-seems-to-be-reversing-itself/#ixzz4LO47rQRG

For years, scientists have been warning the Arctic was in a “death spiral” and could soon be ice-free during the summertime and shrink to unprecedented levels due to man-made global warming. Such ice loss could be “irreversible,” some scientists claimed.

But new research from the Scripps Institution of Oceanography says that predictions of a permanently ice-free Arctic are based on “oversimplified” theories. Scripps researchers, who were co-funded by the Navy, found that the Arctic sea ice may be “substantially more stable than has been suggested in previous idealized modeling studies.”

“We found that two key physical processes, which were often overlooked in previous process models, were actually essential for accurately describing whether sea ice loss is reversible,” Scripps climate scientist Ian Eisenman, co-author of a new study refuting claims the Arctic is in a “death spiral,” said in a statement.

“Our results show that the basis for a sea ice tipping point doesn’t hold up when these additional processes are considered,” echoed Till Wagner, also a Scripps scientist. “In other words, no tipping point is likely to devour what’s left of the Arctic summer sea ice. So if global warming does soon melt all the Arctic sea ice, at least we can expect to get it back if we somehow manage to cool the planet back down again.”

“If the associated parameters are set to values that correspond to the current climate, the ice retreat is reversible and there is no instability when the climate is warmed,” according to Eisenman and Wagner’s study.

Eisenman and Wagner’s study comes after the Arctic hit its lowest maximum sea ice extent on record during February. This was followed by the Arctic having its lowest ice extent for March on record, according to the National Snow and Ice Data Center. Indeed, Arctic sea ice has been declining at a rate of 2.6 percent per decade since 1979.

Scientists and climate pundits have already predicted this year’s Arctic summer sea ice extent will be the lowest on record, following poor winter extent. This has only bolstered claims that the Arctic could soon be ice free.

“Summertime Arctic sea ice is not long for this world,” lamented Joe Romm, a climate scientist and editor for the liberal blog ThinkProgress. “Because of Arctic amplification, the Arctic warms twice as fast (or more) than the Earth as a whole does.”

Romm goes on to cite a February study claiming that Arctic ice is losing its thickness and becoming more susceptible to warmer weather — meaning it’s melting a lot faster. The study, published in the journal The Cryosphere found that “annual mean ice thickness has decreased from 3.59 meters [11.8 feet] in 1975 to 1.25 m [4.1 feet] in 2012, a 65% reduction.”

“The ice is thinning dramatically,” climatologist Ron Lindsay, the study’s lead author, was quoted saying.

It wasn’t long ago that David Barber, Canada’s Research Chair in Arctic System Science at the University of Manitoba, warned there was almost no multi-year ice left in the Northern Hemisphere.

“We are almost out of multiyear sea ice in the northern hemisphere,” he told Canada’s Parliament in 2009. “I’ve never seen anything like this in my 30 years of working in the high Arctic … it was very dramatic.”

Arctic sea ice extent that year was at its third-lowest extent on record, behind 2007 and 2008, and experts were saying there would be no polar ice during the summer by 2030 for the first time in one million years.

“I would argue that, from a practical perspective, we almost have a seasonally ice-free Arctic now, because multiyear sea ice is the barrier to the use and development of the Arctic,” Barber said.

But such predictions have fallen flat, as the Arctic has seen a resurgence of multi-year ice since 2009.

NSIDC and European satellite data show that multi-year sea ice made a big comeback in 2013 and 2014 — increasing from 2.25 to 3.17 million square kilometers during that time and making up 43 percent of the north pole’s ice pack.

In fact, Arctic sea ice extent as a whole seems to be stabilizing despite this year’s record low maximum in February. NSIDC data shows Arctic sea ice extent is currently within the normal range based on the 1981 to 2010 average extent.

“Global sea ice is at a record high, another key indicator that something is working in the opposite direction of what was predicted,” Dr. Benny Peiser, director of the Global Warming Policy Forum, told the U.K. Express in January.

“Most people think the poles are melting… they’re not,” he said. “This is a huge inconvenience that reality is now catching up with climate alarmists, who were predicting that the poles would be melting fairly soon.”

### Climate Wars D---1NC

#### Warming won’t cause global conflict

Dr. Ian Cook 20, Senior Lecturer in Global Politics and Policy at Murdoch University, PhD in Political Theory from the University of Queensland, The Politics of the Final Hundred Years of Humanity (2030-2130), Springer Singapore, Kindle Edition

Yet another problem with the assumption that catastrophic human-caused environment change simply causes civil war, as Salehyan and Hendrix noted, is that violence at the scale of a civil war requires significant resources. In their view, civil wars are more likely to occur in times of relative abundance. While “riots and protests, may emerge from conditions of scarcity,” they argue, “sustaining a militant organization requires considerable planning and resources” (Salehyan and Hendrix 2014, p. 240). Reasons to fight might exist. For this to turn into civil war, however, people “also need the capability to do so, and environmental scarcity may limit such capability, thus undermining the resource base necessary for mobilizing armed violence” (Salehyan and Hendrix 2014, p. 240).

A related debate concerns what Adams and colleagues have claimed to be a sampling bias in studies of the connection between environment change and armed conflict (Adams et al. 2018). Levy accepts the existence of some sampling bias but rejects the view that this bias results in an overstatement of the connection between environment change and conflict. “Knowing that case selection is biased is useful, but not a reason to lower our estimate of the climate’s impact on conflict” (Levy 2018, p. 441).

In responding to Levy’s criticism, authors claiming bias wrote that they did not “deny a link between climate change and conflict in principal. Indeed, some of our own recent work indicates that such a link exists, but it is highly conditional.” Their problem with the research being done in this field was that “sampling biases… increase the risk that such links are overstated, that crucial world regions do not receive sufficient attention and that little knowledge is produced on peaceful adaptation” (Ide et al. 2018, p. 442– 3).

After reviewing the literature on the relationship between climate change and violent conflict, Sakaguchi, Varughese and Auld concluded that the “current literature offers mixed evidence. This makes it difficult to render a definitive statement about the climate-conflict relationship” (2017, p. 640). While they pointed out that just over 60% of the studies they reviewed found “that climate change variables are positively correlated with higher levels of violent conflict,” Sakaguchi, Varughese and Auld also argued that “many subtleties and countertrends underlie this overall pattern” (2017, p. 640). Thus, even though “a majority of reviewed studies envision climate variables influencing conflict through a causal pathway, … these pathways are often theoretically underspecified and have only weak empirical support” (Sakaguchi et al. 2017, p. 641).

As Koubi put it, the research that has been done on this question “provides some evidence that climatic changes could act as a ‘threat multiplier’ in several of the world’s regions. In particular, the extant literature shows that climatic conditions can lead to conflict in agricultural-dependent regions and in combination and interaction with other socioeconomic and political factors” (Koubi 2018, p. 200). After having claimed that, to their knowledge, “no one in the field of climate research has suggested that climate change could be the ‘sole cause’ of war, violence, unrest or migration”, Butler and Kefford recommended “viewing climate change instead as a risk multiplier, influencer or co-factor … In this way of thinking, environmental and ecological factors interact with social determinants, including those that are economic, demographic and political, to produce phenomena such as migration, conflict and famine” (2018, p. 587).

There can be no doubt that conflict will increase during the final hundred years of humanity. But it will result from a complex interaction of socio-political factors and a catastrophically changed environment. It may not go beyond conflict between different groups or between the government and opposition groups and become civil war. This depends on the capacity of those opposition groups. In many cases, they will lack the resources to conduct a civil war. The Syrian war is itself a good illustration of the problem, as the groups opposed to the Syrian government have only been able to conduct the extended civil war in which they have been engaged with the support of outside groups. (Mazzetti and Apuzzo 2016).

The question of whether civil war will break out is something that can only be answered “region by region” and the answer must be based on “knowledge of pre-conflict geographies, such as drivers of resilience and vulnerability” (Farbotko 2018). Sometimes governments may abandon territory and opposition groups can seize control of that land. But it is likely to be land that is suffering worst from the effects of catastrophic human-caused environment change and will not be habitable. To replace an existing government or take control of a region within a country through civil war is no simple thing. It may happen. But it will not happen on the scale that some people have predicted. And it will not happen just because of the weather.

### Climate Wars D---2NC

#### No climate wars OR extinction

Michael Shellenberger 20, Founder and President of Environmental Progress and Co-Founder of the Breakthrough Institute, “Why I Believe Climate Change Is Not the End of the World”, Quillette, 7/8/2020, https://quillette.com/2020/07/08/why-i-believe-climate-change-is-not-the-end-of-the-world/

What the IPCC had actually written in its 2018 report and press release was that in order to have a good chance of limiting warming to 1.5 degrees Celsius from preindustrial times, carbon emissions needed to decline 45 percent by 2030. The IPCC did not say the world would end, nor that civilization would collapse, if temperatures rose above 1.5 degrees Celsius.

Scientists had a similarly negative reaction to the extreme claims made by Extinction Rebellion. Stanford University atmospheric scientist Ken Caldeira, one of the first scientists to raise the alarm about ocean acidification, stressed that “while many species are threatened with extinction, climate change does not threaten human extinction.” MIT climate scientist Kerry Emanuel told me, “I don’t have much patience for the apocalypse criers. I don’t think it’s helpful to describe it as an apocalypse.”

An AOC spokesperson told Axios, “We can quibble about the phraseology, whether it’s existential or cataclysmic.” But, he added, “We’re seeing lots of [climate change–related] problems that are already impacting lives.”

But if that’s the case, the impact is dwarfed by the 92 percent decline in the decadal death toll from natural disasters since its peak in the 1920s. In that decade, 5.4 million people died from natural disasters. In the 2010s, just 0.4 million did. Moreover, that decline occurred during a period when the global population nearly quadrupled.

In fact, both rich and poor societies have become far less vulnerable to extreme weather events in recent decades. In 2019, the journal Global En­vironmental Change published a major study that found death rates and economic damage dropped by 80 to 90 percent during the last four decades, from the 1980s to the present.

While global sea levels rose 7.5 inches (0.19 meters) between 1901 and 2010, the IPCC estimates sea levels will rise as much as 2.2 feet (0.66 meters) by 2100 in its medium scenario, and by 2.7 feet (0.83 meters) in its high-end scenario. Even if these predictions prove to be significant underestimates, the slow pace of sea level rise will likely allow societies ample time for adaptation.

We have good examples of successful adaptation to sea level rise. The Netherlands, for instance, became a wealthy nation despite having one-third of its landmass below sea level, including areas a full seven meters below sea level, as a result of the gradual sinking of its landscapes.

And today, our capability for modifying environments is far greater than ever before. Dutch experts today are already working with the government of Bangladesh to prepare for rising sea levels.

What about fires? Dr. Jon Keeley, a US Geological Survey scientist in California who has researched the topic for 40 years, told me, “We’ve looked at the history of climate and fire throughout the whole state, and through much of the state, particularly the western half of the state, we don’t see any relationship between past climates and the amount of area burned in any given year.”

In 2017, Keeley and a team of scientists modeled 37 different regions across the United States and found that “humans may not only influence fire regimes but their presence can actually override, or swamp out, the effects of climate.” Keeley’s team found that the only statistically significant factors for the frequency and severity of fires on an annual basis were population and proximity to development.

As for the Amazon, the New York Times reported, correctly, that “[the 2019] fires were not caused by climate change.”

In early 2020, scientists challenged the notion that rising carbon dioxide levels in the ocean were making coral reef fish species oblivious to predators. The seven scientists who published their study in the journal Nature had, three years earlier, raised questions about the marine biologist who had made such claims in the journal Science in 2016. After an investigation, James Cook University in Australia concluded that the biologist had fabricated her data.

When it comes to food production, the Food and Agriculture Organization of the United Nations (FAO) concludes that crop yields will increase significantly, under a wide range of climate change scenarios. Humans today produce enough food for ten billion people, a 25 percent surplus, and experts believe we will produce even more despite climate change.

Food production, the FAO finds, will depend more on access to tractors, irrigation, and fertilizer than on climate change, just as it did in the last century. The FAO projects that even farmers in the poorest regions today, like sub-Saharan Africa, may see 40 percent crop yield increases from technological improvements alone.

In its fourth assessment report, the IPCC projected that by 2100, the global economy would be three to six times larger than it is today, and that the costs of adapting to a high (4 degrees Celsius) temperature rise would reduce gross domestic product (GDP) just 4.5 percent.

Does any of that really sound like the end of the world?

The apocalypse now

Anyone interested in seeing the end of the world up close and in person could do little worse than to visit the Democratic Republic of the Congo in central Africa. The Congo has a way of putting first-world prophecies of climate apocalypse into perspective. I traveled there in December 2014 to study the impact of widespread wood fuel use on people and wildlife, particularly on the fabled mountain gorillas.

Within minutes of crossing from the neighboring country of Rwanda into the Congolese city of Goma, I was taken aback by the extreme poverty and chaos: children as young as two years old perched on the handlebars of motorcycles flying past us on roads pockmarked with giant potholes; tin-roofed shanties as homes; people crammed like prisoners into tiny buses with bars over the windows; trash everywhere; giant mounds of cooled lava on the sides of the road, reminders of the volcanic anger just beneath the Earth’s surface.

In the 1990s and again in the early 2000s, Congo was the epicenter of the Great African War, the deadliest conflict since World War II, which involved nine African countries and resulted in the deaths of three to five million people, mostly because of disease and starvation. Another two million people were displaced from their homes or sought asylum in neighboring countries. Hundreds of thousands of people, women, and men, adults, and children, were raped, sometimes more than once, by different armed groups.

During our time in the Congo, armed militias roaming the countryside had been killing villagers, including children, with machetes. Some blamed Al-Shabaab terrorists coming in from Uganda, but nobody took credit for the attacks. The violence appeared unconnected to any military or strategic objective. The national military, police, and United Nations Peacekeeping Forces, about 6,000 soldiers, were either unable or unwilling to do anything about the terrorist attacks.

“Do not travel,” the United States Department of State said, bluntly, of the Congo on its website. “Violent crime, such as armed robbery, armed home invasion, and assault, while rare compared to petty crime, is not uncommon, and local police lack the resources to respond effectively to serious crime. Assailants may pose as police or security agents.”

One reason I felt safe traveling to the eastern Congo and bringing my wife, Helen, was that the actor Ben Affleck had visited several times and even started a charity there to support economic development. If the eastern Congo was safe enough for a Hollywood celebrity, I reasoned, it would be safe enough for Helen and me.

To make sure, I hired Affleck’s guide, translator, and “fixer,” Caleb Kabanda, a Congolese man with a reputation for keeping his clients safe. We spoke on the telephone before I arrived. I told Caleb I wanted to study the relationship between energy scarcity and conservation. Referring to the North Kivu province capital of Goma, the sixth most populated city in the Congo, Caleb asked, “Can you imagine a city of nearly two million people relying on wood for energy? It’s crazy!”

Ninety-eight percent of people in eastern Congo rely on wood and charcoal as their primary energy for cooking. In the Congo as a whole, nine out of 10 of its nearly 92 million people do, while just one out of five has any access to electricity. The entire country relies on just 1,500 megawatts of electricity, which is about as much as a city of one million requires in developed nations.

The main road Caleb and I used to travel from Goma to the communities around Virunga Park had recently been paved, but there was little else in the way of infrastructure. Most roads were dirt roads. When it rained, both the paved and unpaved roads and the surrounding homes were flooded because there was no flood control system. I was reminded of how much we take for granted in developed nations. We practically forget that the gutters, canals, and culverts, which capture and divert water away from our homes, even exist.

Is climate change playing a role in Congo’s ongoing instability? If it is, it’s outweighed by other factors. Climate change, noted a large team of researchers in 2019, “has affected organized armed conflict within countries. However, other drivers, such as low socioeconomic development and low capabilities of the state, are judged to be substantially more influential.”

There is only a barely functioning government in the Congo. When it comes to security and development, people are mostly on their own. Depending on the season, farmers suffer too much rain or not enough. Recently, there has been flooding once every two or three years. Floods regularly destroy homes and farms.

Researchers with the Peace Research Institute Oslo note, “Demographic and environmental variables have a very moderate effect on the risk of civil conflict.” The IPCC agrees. “There is robust evidence of disasters displacing people worldwide, but limited evidence that climate change or sea-level rise is the direct cause.”

Lack of infrastructure plus scarcity of clean water brings disease. As a result, Congo suffers some of the highest rates of cholera, malaria, yellow fever, and other preventable diseases in the world.

“Lower levels of GDP are the most important predictor of armed conflict,” write the Oslo researchers, who add, “Our results show that resource scarcity affects the risk of conflict less in low-income states than in wealthier states.”

If resources determined a nation’s fate, then resource-scarce Japan would be poor and at war while the Congo would be rich and at peace. Congo is astonishingly rich when it comes to its lands, minerals, forests, oil, and gas.

There are many reasons why the Congo is so dysfunctional. It is massive—it is the second largest African nation in area, behind only Algeria—and difficult to govern as a single country. It was colonized by the Belgians, who fled the country in the early 1960s without establishing strong government institutions, like an independent judiciary and a military.

Is it overpopulated? The population of Eastern Congo has doubled since the 1950s and 1960s. But the main factor is technological: the same area could produce much more food and support many more people if there were roads, fertilizers, and tractors.

The Congo is a victim of geography, colonialism, and terrible post-colonial governments. Its economy grew from $7.4 billion in 2001 to $38 billion in 2017, but the annual per capita income of $561 is one of the lowest in the world, leading many to conclude that much of the money that should flow to the people is being stolen.

For the last 20 years, the Rwandan government has been taking minerals from its neighbor and exporting them as its own. To protect and obscure its activities, Rwanda has financed and overseen the low-intensity conflict in Eastern Congo, according to experts.

There were free elections in 2006 and optimism around the new president, Joseph Kabila, but he proved as corrupt as past leaders. After being re-elected in 2011, he stayed in power until 2018, when he installed a candidate who won just 19 percent of the vote as compared to the opposition candidate, who won 59 percent. As such, Kabila and his allies in the legislature appear to be governing behind the scenes.

Low levels of GDP, not climate change, are correlated with armed conflict, such as in the Congo

Billions won’t die

#### Climate change doesn’t cause war

Giorgos Kallis 14, environmental scientist working on ecological economics and political ecology, and Professor, Department of Geography and Institute of Environmental Science & Technology, Autonomous University of Barcelona, “Hydro-climatic change, conflict and security,” *Climatic Change*, Volume 123, 2014, pp. 69-82

This field uses large-N datasets of countries or regions to examine correlations between hydroclimatic variability and civil conflict, controlling for socio-economic and political factors. Although under certain social conditions they might aggravate the risk of conflict, scarcity and climate change are overall not found to have an important association with armed conflict, especially if compared to poverty and dysfunctional institutions (Gleditsch 2012). Lower rainfall levels and negative rainfall shocks are more associated to increased conflict risk in sub-Saharan Africa (Miguel et al. 2004), though the specification of rainfall intervals of the study has been criticised, and the result is not robust to different specifications (Ciccone 2011). In a similar study, Burke et al. 2009 find that global warming, could increase probabilities of armed conflict incidence in Africa by 54 % until 2030, but due to temperature increases, not rainfall changes. These results too are sensitive to the time period and severity threshold used and are not reproducible with alternative specifications (Buhaug 2010). Other studies conclude that climate variability is a poor predictor of armed conflict (Hendrix and Glaser 2007). Political exclusion of ethnic groups rather than a drought-conflict nexus drives conflict, and this is not influenced by drought occurrence, suggesting that water may not even be a threat multiplier (Theisen et al. 2011).

This literature has mostly focussed in Africa, since the prevalence of rainfed agriculture makes more likely there a link between climate, water and violent conflict. Global datasets that go beyond Africa confirm that climatic variability does not associate with violent conflict (Koubi et al. 2012); the link between climate, growth and conflict is contingent on the political system, with non-democratic countries facing higher risks. Extreme events such as flash-floods and intense storms negatively associate to GDP growth but not to the likelihood of armed conflict (Bergholt and Lujala 2012). A study that uses damage—instead of hazard—level variables finds that climate-related natural disasters decrease, rather than increase, the risk of civil war (Slettebak 2012).

### Climate Wars D---AT: Instability

#### Climate change may cause more crime and low-level violence, but it won’t escalate

Ole M. Theisen 13, Assistant Professor in Political Science, Norwegian University of Science and Technology, “Is climate change a driver of armed conflict?” *Climatic Change*, Volume 117, 2013, pp. 613-625

A long line of research links hot temperatures to individual aggression, including violent crime and riots. Anderson (2001) suggests that therefore global warming may increase violence. But the causal mechanism proposed in these studies (personal discomfort) is different from the scarcity thesis that is at the core of the relationship proposed in the literature on climate change and armed conflict (Reuveny 2007; Burke et al. 2009) and the kind of violence is also different. Other studies that focus on individual-level behavior, drawing on relative deprivation or opportunity cost arguments, find scarcity to be associated with more violence or crime. Mehlum et al. (2006) report that in 19th century Bavaria, abundant rainfall ruined harvests which raised rye prices in turn leading to higher rates of property crime.2 Likewise, Miguel (2005) concludes that both positive and negative extremes in rainfall increased the frequency of witch killings in a rural Tanzanian district. Using a field experiment from semi-arid Tanzania, Lecoutere et al. (2010) find water scarcity to drive conflictive behavior, particularly so for poor and marginalized households. Hidalgo et al. (2010) find that rainfall deviations as an instrument for agricultural economic shocks lead the rural poor to invade large landholdings in Brazil, and particularly so in municipalities with a highly unequal land distribution. Thus, if we were to make an inference from unorganized events with low levels of violence to organized armed conflict, we would expect worsening climatic conditions to coincide with more armed conflict.

Table 1 below provides an overview of quantitative studies of climate factors in organized violence. Each column represents a specific conflict type under study whereas each row corresponds to a proposed climate-conflict connection. The lack of consensus on empirical findings is striking. This is partly a consequence of the diversity of indicators applied although it is also in part a consequence of differences in samples, time periods, and estimation techniques.3

Riots and small-scale clashes are other suggested social consequences of climate change related to armed conflict. The «Arab spring» starting in early 2011 has once more demonstrated that initially peaceful demonstrations can trigger protracted and bloody confrontations, although the link to climate is unclear in this case. Hendrix and Haggard (2012) find that higher food prices in weak regimes increase the risk of urban riots. Similarly, Bohlken and Sergenti (2010), analyzing Hindu-Muslim riots in India, find negative rainfall growth to decrease economic growth which in turn increases the risk of a riot.

Several statistical studies of conflict in Africa have found social violence and communal conflict to be most likely in or following wet periods (Raleigh and Kniveton 2012; Hendrix and Salehyan 2012; Theisen 2012). The two first studies also found some increased risk following particularly dry periods, in line with a recent study by Fjelde and von Uexkull (2012) which finds drier years to be less safe. Thus, the support for the scarcity scenario is mixed. Anthropological research on cattle raids in Africa has also found death rates in years with abundant rainfall to be higher than in dry years (Witsenburg and Adano 2009; Adano et al. 2012) or in seasons with less vegetation (Meier et al. 2007). Dry periods are associated with cooperative behavior (Eaton 2008). From a climate-and-security perspective this might seem surprising as small-scale violence has been argued to be the most likely phenomenon to be affected by resource scarcity. However, pastoralist violence seems to be more driven more by tactical concerns than by resource-based grievances. Adano et al. (2012) argue from two case studies in Kenya that whether tensions are high in scarce (Maasai area) or in abundant (Marsabit district) contexts, the local groups’ use of traditional as well as modern institutions are instrumental in preventing escalation into violent conflict. Using a contest success function model Butler and Gates (2012) deduce theoretically that the presence of biased property rights institutions in periods of relative rainfall abundance is crucial in determining whether Eastern African pastoralists engage in inter-ethnic violence or focus on production, but they do not test this empirically. Much of this research is on pastoralist societies in drylands and it is reasonable to assume that the mechanisms at play are different from those driving civil wars. Indeed, Raleigh and Kniveton (2012) find that communal violence takes place in less-populated areas, in contrast to what is found for civil war (Theisen et al. 2011/12). Due to a lack of reliable data, there are few studies on climate factors and small-scale violent conflicts outside East Africa. One study using survey material on Indonesia concludes that villages that had suffered a natural disaster during the last 3 years were more likely to experience violent conflict (Barron et al. 2009). A study of the Mopti region of Mali finds no relationship between climatic conditions and land-use disputes (Benjaminsen et al. 2012). Rather than natural resource scarcity, they find restricted mobility for pastoralists, political negligence, and rent seeking and corruption to be at the heart of the conflict. Research on communal violence, a field still in its infancy, points to the importance of abundance as well as scarcity of resources, primarily measured as rainfall, as contributions to violence.

Given economic and organizational constraints and not least the fact that rebels are fighting a government, armed civil conflicts are quite different from individual crime and low-level violence. Statistical studies of civil conflicts globally (Esty et al. 1998; Raleigh and Urdal 2007) or in Africa (Hendrix and Glaser 2007) provide only limited support for neo-Malthusian hypotheses. For instance, Raleigh and Urdal (2007: 674) concluded on the basis of local-level data that the effects of land degradation and water scarcity were «weak, negligible, or insignificant». Moreover, for the «favorite case» of Darfur, Kevane and Gray (2008) found precipitation levels to increase from the early 1980s until 2003 when the conflict escalated. Brown (2010) corrobates this result, showing that for the same period the vegetation cover of the area increased. Likewise, Rowhani et al. (2011) found a positive association between ecosystem productivity and civil conflict areas in Eastern Africa.

#### Disasters cause people to unite and state stability will be maintained

Ole M. Theisen 13, Assistant Professor in Political Science, Norwegian University of Science and Technology, “Is climate change a driver of armed conflict?” *Climatic Change*, Volume 117, 2013, pp. 613-625

Natural disasters are expected to exacerbate conflict risk primarily through economic loss and a weakening of government authority. Some statistical studies do indeed find the risk of conflict to be higher following natural disasters (Drury and Olson 1998; Brancati 2007; Nel and Righarts 2008). However, these findings are challenged by Slettebak (2012), who reports an opposite effect and attributes it to a tendency to unite in adversity.6 Omelicheva (2011) finds that when state fragility is taken into account, the risk of state failure in the aftermath of a disaster is minimal or disappears. Besley and Persson (2011) find that climatic disasters do not affect growth, but increase the risk of civil war, but only so in fragile states. Another recent study, Bergholt and Lujala (2012), reaches the opposite conclusion. It finds that climatic natural disasters have a negative impact on economic growth but have no effect on the onset of conflict, neither directly nor as an instrument for economic shocks. The discrepancy between these two studies is arguably due to the former studying the incidence of civil war and disasters which could introduce endogeneity problems.

### Climate Wars D---AT: Refugees

#### No impact to migration from climate change

Kate Burrows 16, PhD Candidate, Yale School of Forestry & Environmental Studies, Master’s in Public Health from Columbia University, “Exploring the Climate Change, Migration and Conflict Nexus,” *International Journal of Environmental Research and Public Health*, Volume 13, Issue 4, 2016, pp. 443-460

One of the simplest, but starkest, counter-arguments to the potential for climate-induced migration to lead to dramatic risk of conflict is the fact that most migration flows do not lead to conflict. Since the 1950s, the majority of countries that have received large numbers of refugees have not engaged in armed conflict [62]. This does not mean that there has not been intergroup conflict, but it does suggest that even a large increase in migration is not necessarily a security risk. Furthermore, scholars such as Michael Humphrey argue that there has been an increased focus in the West on the potential security implications of migration as a result of the terrorist attacks on the United States on 11 September 2001 [63]. Humphrey suggests that this framing of migration, particularly in the United States, can obfuscate the fact that it is a necessary and intrinsic part of global population dynamics, and one that does not usually pose a security threat [63].

This underscores the fact that other factors may be more significant than migration in determining whether conflict will occur. For example, sociologist Slettbak argued that populations often unite after natural disasters and that the risk of violent conflict after such an event can be quite low [64]. Slettbak draws from an expansive 1961 study (for which over 16,000 interviews and questionnaires were conducted) about human behavior during disaster situations. The study concluded that most disasters “produce a great increase in social solidarity . . . [which] reduces the incidence of most forms of personal and social pathology” ([64], p. 165). Slettbak also notes that disasters may even unify those whose differences might initially be viewed as sources of conflict—for example, ethnic, socioeconomic, or religious differences [64]. This suggests that, for example, even if migration heightened ethnic or racial tensions, a natural disaster might not increase risk of conflict but might actually result in a more unified population.

Another potential stabilizing factor that has been discussed frequently is general political stability and the ability and capacity of government to maintain peace [61,65]. If the state has the capacity to provide resources, such as healthcare, education, and livelihood assistance in the event of economic recession, it has a greater capacity to maintain order and stability in the face of environmental change [16]. A state may mitigate potential conflict by providing livelihood assistance when necessary, furthermore a well-developed and functioning government may have adaptation or mitigation plans in place to deal with the challenges of climate change [16]. In particular, the development of early warning systems could aid in early and informed decision-making, which would allow migration to be successfully employed as an adaptation measure, as opposed to a last resort [66].

Thus, despite the added cultural and socioeconomic stress of migration, conflict is not inevitable or even likely in well-established political states. Democracies, in particular, have been shown to be protective against conflict because these states are accountable to their populations and, due to this responsibility, may take steps to conserve water and land in the event of resource depletion [17]. Thus, even with the added stress on resources, a state can perform stabilizing functions to help maintain peace. This directly challenges the neo-Malthusian model, which fails to account for stabilizing forces, such as political and economic stability, that may outweigh competition for resources and thus limit conflict [61]. This echoes the findings that democratic states and institutions have the capacity to regulate environmental degradation and preserve peace [17,67]. Additionally, it has been suggested that human ingenuity and technology have the potential to outweigh the potential dangers of environmental degradation [1].

## Solvency

### Admin Fails---1NC

#### Productive employment would be impossible to attain.

Matt Bruenig 18, American lawyer, blogger, policy analyst, commentator, and founder of the left-leaning think tank People's Policy Project, blogger for the American think tank Demos covering politics and public policy and has written on issues including income distribution, taxation, welfare, elections, and the Nordic model, “Some Notes on Federal Job Guarantee Proposals,” People's Policy Project, 3-22-2018, https://www.peoplespolicyproject.org/2018/03/22/some-notes-on-federal-job-guarantee-proposals/

Other Approaches

The left has long said that full employment must be an economic priority. But a program where you create offices around the country that promise to find tasks for anyone who shows up is obviously not the only possible approach here.

For instance, consider a package where the Federal Reserve stops prematurely jacking up rates, the federal government funds ordinary active labor market policies (ALMP) that help match people to job openings, and provides free child care. This is how a more typical country seems to pursue high employment rates, with considerable success

These other approaches to full employment will presumably be deemed insufficient because they don’t truly eliminate all involuntary unemployment in the same way that a take-all-comers approach that directly employs any and all random labor flows does. But this is more of a semantical distinction than anything else. If you take anyone receiving an unemployment check and have them do some sort of task, you can declare that they are employed. Workfare does not traditionally get counted as employment but if you wanted to do that, you obviously could. Whether such people are usefully employed in any meaningful respect is a different thing altogether and the idea that thousands of administrations across the country will be able to usefully employ random flows of labor with random sets of skills in random durations is fairly implausible. This is not a knock on the bureaucracy. The top business geniuses in the country would struggle to run an enterprise like that.

### Admin Fails---2NC

#### That’s offense---it triggers a decline in well-being by eliminating all the stuff.

Daniel Sutter 21, Charles G. Koch Professor of Economics with the Manuel H. Johnson Center for Political Economy at Troy University and is a Ph.D. graduate of George Mason University, “Government Jobs for All?,” AIER, 11/8/2021, https://www.aier.org/article/government-jobs-for-all/

Modern Monetary Theory (MMT) offers some unconventional policy recommendations based on the United States’ monetary sovereignty. MMT proponents also advocate government guaranteed jobs paying a living wage for all Americans. What would be the consequences of such a guarantee?

The Public Service Employment program detailed in a 2018 paper from the Levy Economics Institute would be funded by Washington and administered by states. It would offer full and part-time jobs paying $15 per hour plus benefits. The program’s spending would be mandatory, like other entitlement programs. The jobs would “provide public services in nonprofit community organizations, public schools, and state and local governments.”

The program could accomplish three distinct ends. The first is stabilizing aggregate demand during economic downturns. The second is instituting work-relief in place of cash assistance. The third is implementing a “living wage” for all Americans.

When the economy slips into recession, businesses lay off some workers and cut others’ wages. Reductions in these workers’ spending produce second-round (and third-round) effects: landlords, for example, cut back their spending after not receiving rent. Many economists support macroeconomic stabilization.

Stabilization works much better when automatic. Discretionary stabilization spending, like 2009’s American Recovery and Reinvestment Act, can take months to enact. Laid off workers can start a guaranteed government job immediately.

Today unemployed workers receive cash assistance. While I do not advocate government make-work jobs, work-relief has two advantages over cash assistance. First, work requirements effectively control fraud, as revealed by the 1990s welfare reforms. People working while on the welfare rolls never showed up for mandatory job training.

Work-relief also denies recipients the leisure of staying home. People will compare the full value of their options. Suppose a person values the freedom of not working at $30,000 a year. If they also receive $10,000, only a $20 per hour job matches the full value of the cash assistance.

The MMT jobs program also implements a living wage providing a “just” level of compensation. Economics shows how workers in a competitive labor market get paid the value they create for businesses. The “problem” of low wages is then inadequate job skills.

The living wage is redistribution disguised as work. Market wages and salaries are not charity; the prices customers willingly pay for goods and services cover workers’ pay. Market-based salaries come entirely from voluntary payment and workers earn their pay by helping produce goods and services.

Guaranteed jobs effectively set a minimum wage because few Americans will work for businesses offering worse compensation packages (wages and benefits). Government jobs would be far more effective in assisting low-wage workers because a minimum wage ends up pricing many out of the labor market altogether.

Government jobs paying $15 an hour plus benefits would likely cost $40,000 per job annually. MMT proponents project 15 million government jobs would be needed even when the economy is strong. MMT can advocate such a budget-busting program because in its view monetary sovereignty renders Federal spending costless under most circumstances.

The biggest potential problem with the jobs guarantee, even at a lower wage, is whether people will have to work. What exactly is a government “guaranteed job?” The term job suggests a person must work satisfactorily or be fired. The guarantee suggests anyone fired must then be given another position.

Government guaranteed no-show jobs would blow up the labor market. If you had a “job” paying $30,000 plus benefits not requiring work, how much would you need to be paid to take a real job? Guaranteed $15 per hour no-show jobs would effectively be a $30 or $40 per hour minimum wage.

The United States is prosperous because we produce goods and services people want in large quantities. Yet production requires real work, not government make-work jobs. By diverting millions out of productive private sector jobs, the MMT jobs guarantee seems guaranteed to impoverish America.

### Not Degrowth---1NC

#### Job guarantee fails at changing the nature of capitalist social relations.

Peter Kriesler et al. 20, Peter Kriesler, School of Economics, University of NSW; Joseph Halevi, International University, College of Turin; Mark Setterfield, Department of Economics, New School for Social Research, “Political Aspects of ‘Buffer Stock’ Employment: A Reconsideration,” August 2020, Working Paper 09/2020, SSRN

Much of the debate surrounding JG/ELR schemes has focused on their suitability as alternatives to traditional policy interventions (such as the use of fiscal policy to manipulate aggregate demand) as a method of achieving full employment,2 or (and in particular) on the pros and cons of the broader Modern Money Theory (MMT) with which JG/ELR schemes are frequently associated.3 The key question addressed in this paper, however, is whether or not a JG/ELR scheme, in and of itself, represents the type of institutional change that Kalecki had in mind as being necessary for the maintenance of full employment. In other words, we ask: can the implementation of a JG/ELR program change the dialectics of capitalist economies, reforming class relations so that full employment becomes achievable as a permanent state? Since Kriesler and Halevi (2001), concern with this issue has arisen elsewhere (see, for example, Palley (2018, p.24 and Levrero (2019, pp.47, 53-54)), but it has been addressed more-or-less in passing, in the course of more general reactions to JG/ELR schemes or MMT. In this paper, it is the sole focus of attention.

The remainder of the paper is organized as follows. In section 2, we outline Kalecki’s attitude towards the achievement of full employment, based on the principle of effective demand. Section 3 then discusses the political aspects of full employment that, according to Kalecki (1943), will frustrate the maintenance of full employment in capitalist economies. In section 4, we use a cost of job loss framework (Shapiro and Stiglitz, 1984; Schor and Bowles, 1987) to analyse political aspects of buffer stock employment, and so address the question as to whether or not JG/ELR schemes provide the requisite institutional transformation to facilitate the maintenance of full employment. We also consider the precise form of the state and its implications for those in buffer stock employment. Although this does not impinge on the capacity of JG/ELR schemes to maintain full employment per se, it is – as will become clear – germane to our broader concern with the political aspects of such schemes. Finally, section 5 concludes.

2. Achieving Full Employment

According to Kalecki, the contradictory nature of capitalist dynamics is not the result of the classical inverse relation between the wage rate and the profit rate. For Kalecki, the existence of excess capacity (and hence a variable rate of capacity utilization) destroys any unambiguously indirect relation between real wages and the rate of profits, by virtue of the direct effect of changes in the wage rate on aggregate demand, output, and hence the rate of capacity utilization. To see this, begin with a statement of the division of income in a two-class economy between wages and profits:

Y = wN + rK [1]

where Y denotes total income, w is the wage level, N is the level of employment, r is the rate of profits, and K denotes the capital stock. Here and throughout this paper, all variables other than those such as N (for which there exists a physical unit of account) are nominal values deflated by a common price index, and are therefore measured in constant prices. Standardizing equation [1] by the capital stock and re-arranging, we can write:

r Y (1 wa) K = − [2]

where a represents the (constant) labour to output ratio given the current state of technology. Equation [2] can, in turn, be re-written as:

f (1 ) f Y Y r wa Y K = − [3]

where Yf denotes full capacity output (that is, the maximum level of output that can be produced, given the current state of technology, with a capital stock of size K). According to classical economics, Y = Yf : the fundamental constraint on economic activity is the availability of capital. In this case, we have:

r 1 (1 wa) v = − [3a] dr a 0 dw v ⇒ = − <

where v represents the full-capacity capital-output ratio. According to Kalecki, however, / 1 f f Y < Y ⇒Y Y = u < : the fundamental constraint on economic activity is aggregate demand, which determines Y and (in general) imposes on the economy chronic underutilization of productive resources (represented in this exercise by the variable rate of capacity utilization u < 1). In this case, we have:

r u (1 wa) v = − [3b] dr ua 1 (1 wa) du dw v v dw ⇒ =− + −

If du/dw > 0 – that is, if aggregate demand is wage-led (so that a redistribution of income towards wages raises aggregate demand and hence total output) – then the sign of the derivative of [3b] reported above is ambiguous. The classical trade-off between the real wage and rate of profits can now break down.

In Kaleckian macroeconomics, it is the dual function of investment, as both a form of expenditure and a source of additional productive capacity, that gives rise to the basic underlying contradiction of a capitalist economy. Investment plays a key role in the determination of the level of effective demand, but also determines the size of the capital stock and influences the productivity of labour. Hence:

We see that the question, “what causes periodic crises?” could be answered briefly: the fact that the investment is not only produced but also producing. Investment considered as capitalist spending is the source of prosperity, and every increase of it improves business and stimulates a further rise of spending for investment. But, at the same time investment is an addition to the capital equipment, and right from birth it competes with the older generation of this equipment. The tragedy of investment is that it calls forth the crisis because it is useful; I do not wonder that many people consider this theory paradoxical. But it is not the theory which is paradoxical but its subject - the capitalist economy. (Kalecki, 1936-37 p. 554).

Investment as expenditure and therefore as a source of profits is an important component of effective demand. The crisis is caused when that investment manifests itself as new equipment and so increases existing productive capacity. Unless effective demand grows at the same pace as the growth in capacity, the special case of balanced growth, it is likely to generate unused capacity with negative repercussions for future investment decisions and profits. The achievement and maintenance of full employment thus requires measures aimed at stimulating and/or supplementing overall investment spending by capitalist firms.

One obvious supplement to private investment is public spending, so in principle full employment can be achieved via fiscal stimulus. In this case, Kalecki argues, and contrary to mainstream neoclassical opinion, the burden of the national debt will not constitute a significant problem. Obviously, a constant proportion of debt to national income does not create any problem in financing interest payments. If, by contrast, full employment has to be maintained through a budget deficit that rises as a proportion of national income, then an appropriate tax will be required in order to finance the increasing interest burden. Kalecki recommends a capital tax which, unlike an income tax, will not affect the profitability of investment if it is levied on all forms of wealth (including money balances), and so is likely to leave investment unchanged. In the aggregate, government expenditure financed by a capital tax will not affect the income of capitalists as a class. The increase in income generated by the government expenditure will be offset by the tax, so that some capitalists will be better off while others are worse off.4 In other words, it is possible to maintain levels of effective demand sufficient to generate full employment, without substantial domestic problems for the domestic economy.5

3. Political Obstacles to the Maintenance of Full Employment

Although it is possible to achieve full employment in a demand-led capitalist economy, its maintenance is nevertheless likely to run into insurmountable problems. In ‘Political aspects of full employment’ Kalecki (1943) appeared relatively optimistic about the efficacy of fiscal policy in achieving full employment. However, he believed that there were fundamental “political problems” which make full employment incompatible with capitalism, arguing that “there is a political background in the opposition to the full employment doctrine” (Kalecki 1943 p. 349). Kalecki highlighted three main “reasons for the opposition of ‘industrial leaders’ to full employment achieved by government spending” resulting in class/political pressure being brought to bear [ibid.]:

1.General dislike of government intervention, especially with respect to employment creation. This is reinforced by the power of industry over government in the absence of such intervention. In this case, employment and the level of economic activity are extremely responsive to the “state of confidence” of the “captains of industry”. This gives them significant power over government policy which fiscal intervention would blunt.

2. Dislike of the specific composition of government expenditure, especially with public investment and subsidisation of mass consumption.

3.Dislike of the social and political consequences of long-term full employment:

We have considered the political reasons for the opposition to the policy of

creating employment by government spending. But even if this opposition were overcome - as it may well be under the pressure of the masses - the maintenance of full employment would cause social and political changes which would give a new impetus to the opposition of the business leaders. Indeed, under a regime of permanent full employment, the ‘sack’ would cease to play its role as a disciplinary measure. The social position of the boss would be undermined, and the self-assurance and class-consciousness of the working class would grow. Strikes for wage increases and improvements in conditions of work would create political tension. It is true that profits would be higher under a regime of full employment than they are on the average under laissez-faire; and even the rise in wage rates resulting from the stronger bargaining power of the workers is less likely to reduce profits than to increase prices and thus adversely affects only the rentier interests. But ‘discipline in the factories’ and ‘political stability’ are more appreciated than profits by business leaders. Their class instinct tells them that lasting full employment is unsound from their point of view, and that unemployment is an integral part of the ‘normal’ capitalist system. (Kalecki 1943 p. 351)

As a result of these considerations, Kalecki argues that the maintenance of full employment is incompatible with capitalism, without fundamental changes to the underlying institutions.

‘Full employment capitalism’ will, of course, have to develop new social and political institutions which will reflect the increased power of the working class. If capitalism can adjust itself to full employment, a fundamental reform will have been incorporated in it. If not, it will show itself an outmoded system which must be scrapped. (Kalecki 1943 p. 356)

In other words, problems with effective demand are only symptoms of the underlying problem. The use of fiscal policy to increase demand will provide a temporary salve, but what is needed are more fundamental changes to the socio-economic and political structure of society in order to permanently eradicate mass unemployment.

Kalecki's argument, which stresses the socio-political viewpoint of capitalists, is reinforced by the Marxist appreciation of the viewpoint of workers. In a capitalist economy, workers are alienated within the production process, during which it is their exploitation that allows capitalists to earn profits. As a result, whenever they have the power to do so, workers will strive to improve both their working conditions and their pay. In other words, according to the logic of capitalism, capitalists are right to fear full employment: empowered workers will use that power to improve their lot.

For Marx, unemployment was essential for the survival of capitalism. During the accumulation process, profits drive capital accumulation, increasing the demand for labour until all the excess labour is absorbed into the work force, and wages rise. This puts pressure on profits which, as a result, fall. The resulting crisis gives rise to structural change in the economy and regenerates the reserve army of the unemployed, which then puts downward pressure on wages. As profits rise, the cycle begins again. Central to this dynamic is the inverse relation between the wage rate and the rate of profits, which was the foundation of classical analysis.6

Although Kalecki took from Marx the idea of the incompatibility of capitalism and full employment, he saw it operating via a very different mechanism. As Kalecki rejected the vision of competitive capitalism with little excess capacity, he developed a model where an increase in the wage rate would, by increasing aggregate demand, increase profits. In other words, for Kalecki, wages and profits were no longer antagonistic.

The incompatibility of capitalism and full employment instead results from a more fundamental aspect of the class relationship. As the above discussion indicates, unemployment is the means by which the capitalist class asserts its control over the working class. Without unemployment, the inherent contradictions of the system would exasperate the underlying social and political tensions resulting in problems of discipline and instability. Either the institutional base of the economy would need to change, or full employment would have to be sacrificed. In retrospect, the period since 1980 has demonstrated that almost all capitalist economies are inclined to take the easy way out, abandoning the commitment to full employment. This was sanctioned, in exactly the manner predicted by Kalecki, by economists, who argued the impotence of fiscal policy and the paramount need for “sound finance”.

4. Political Aspects of ‘Buffer Stock’ Employment

We are now in a position to ask the question posed in the introduction: do governments acting as employers of last resort constitute the sort of “fundamental reform” of capitalist relations of production necessary (per Kalecki) for capitalism to maintain (as opposed to merely achieve) full employment? It should be noted that in what follows, we will not consider the important benefits that a buffer stock employment scheme will bring. There can be no doubt that elimination of unemployment in any manner, no matter how temporary, will reduce the heavy social costs of unemployment associated with increased crime, health problems and other serious social problems (Atkinson et al, 1986: Wray, 1998b: Nevile and Kriesler, 1998; Morris, 2002; Knabe and Rätzel, 2010).7 However, the exclusive concern of this paper is with the longer-term socio-political implications of such schemes and the difficulty of maintaining full employment in light of these implications. As such, we focus entirely on the question just posed. In order to answer this question, we need to consider the degree to which an ELR/JG scheme can alleviate class conflicts – in other words, the extent to which it can reconcile the opposing interests of capital and labour in capitalist economies. It is to this task that we now turn.

i) Unemployment as a worker discipline device

As discussed above, unemployment serves an important function in capitalist economies by disciplining workers, with respect to both their wage demands and their labour effort. The major part of this discipline comes, of course, from the loss in income. Here, the cost of job loss to a worker depends both on the likelihood of getting another job and of the loss of income associated with unemployment and (potentially) with the new job (Shapiro and Stiglitz, 1984; Schor and Bowles, 1987). But a further substantial cost of unemployment is the loss of social as well as economic identity associated with joblessness. ‘Buffer stock’ employment eliminates this non-pecuniary cost: there is no job loss. For ‘the sack’ to maintain its power of discipline over workers, therefore, the movement from private sector employment to ‘buffer stock’ or JG employment must present a cost to the worker in terms of income loss. This immediately sets a maximum level to the wages paid for ‘buffer stock’ employment.8

Consider now the implications for wage bargaining and inflation control. In contemporary capitalism, inflation control can be achieved through restrictive fiscal and monetary policy building up the reserve army of unemployed (reinforced more recently by industrial relations policies which significantly erode the bargaining power of labour). The increased unemployment both reduces demand pressures and (more importantly) reduces the power of workers to attempt to bid up or even maintain real wages.9 As a result, just as in Marx, unemployment puts pressure on wage earners, and hence the value of the real wage contributes to the stability of the system. In the JG model, this disciplinary role is played not by unemployment, but by the movement of workers into buffer stock employment. As Mitchell (1998) argues:

As the BER [ratio of buffer stock employment to total employment] rises, due to an increase in interest rates and/or a fiscal tightening, resources are transferred from the inflating non-buffer stock sector into the buffer stock sector at a price set by the government; this price provides the inflation discipline. (p. 551)

In the advent of inflation, and absent a JG scheme, workers dropping from employment to unemployment reduce inflationary pressure both by reducing demand and by reducing the militancy of the labour force. With a JG, workers will drop from employment to ‘buffer’ employment. But ceteris paribus, the latter must provide much the same ‘Phillips curve effect’ as unemployment (Seccareccia, 2004; see also Wray, 1998b, pp.543-4). Indeed, if the loss in income associated with this transition is less than the income loss associated with dropping from employment into unemployment – so that buffer stock employment is something more than ‘workfare’ – then ceteris paribus, more workers must change state in order to effect the same level of discipline on workers and hence leave inflation unchanged. In this case, the NAIBER (the “non-accelerating inflation buffer employment share, [which] is the ratio of buffer stock employment to total employment that is required to stabilise inflation” (Mitchell 1998 p. 547n)) must be higher than the NAIRU.10 The JG thus involves a clear opportunity cost of size x = NAIBER – NAIRU, the proportion of the labour force that will now be in ‘buffer stock’ employment rather than being ‘fully’ employed in the private sector. It would appear that in order to create sufficient discipline to control inflation, the rate of private sector employment needs to be lower with a JG scheme that pays in excess of any unemployment benefit (Sawyer, 2003). Apart from the cost imposed on workers, this will also have potential implications for private sector profitability and growth.11

In order to investigate more thoroughly what is at stake here, write the expected cost of job loss in constant-price terms (c) as:

ci = ( pD + pR,i )ni (w −σ i ) [4]

where pD is the probability of job destruction due to a firm-specific, industry-specific or macroeconomic shock (which we take as exogenously given, regardless of whether or not there is an JG scheme operating), pR is the probability of employer-initiated replacement of an “insider” (current employee) by an “outsider” (either an unemployed worker or a JG worker) independent of insider performance,12 n is the duration of the unemployment or JG spell, w is, as previously defined, the real wage received in private sector employment (again taken as given), σ is the replacement income that workers not employed in the private sector receive from the state (i.e., r is either an unemployment benefit or the JG wage), and i = U, JG, with U denoting values pertaining to a regime of conventional unemployment and JG denoting values pertaining to a regime characterized by a JG scheme.13 Note that 0, i i w >σ ⇒c > ∀i . In other words, just as the unemployment replacement rate must be less than one in order to avoid incentivizing unemployment, so, too, must the buffer stock employment wage be less that the private sector employment wage in order to avoid incentivizing buffer stock employment and thus effectively converting the public sector into an employer of first resort.

In addition to [4], we also write:

,() , 0Rieppep=< [5]

where e is the private sector employment rate (total employment in the private sector divided by the total labour force, which we take as given). Equation [5] states that as private sector employment rises (which, given the size of the labour force, raises e), the ease with which employers can replace insiders with outsiders diminishes, reducing the likelihood of such replacement. Note that this will, in turn, affect the expected cost of job loss in [4].

Now suppose that a JG scheme is introduced, so that all previously unemployed workers are henceforth employed by the public sector. If σJG = σU, then ceteris paribus, the JG scheme will not affect the expected cost of job loss. There would be no need to have NAIBER > NAIRU in order to reduce e in order to make pR,JG > pR,U (via equation [5]) in order to make cJG = cU (in equation [4]). However, if σJG = σU, then a JG scheme is effectively workfare – “working for the dole”. This is not the ambition of such schemes (and rightly so), which is, instead, to create “proper” jobs with a real wage in excess of unemployment benefits. It is therefore more reasonable to assume that we will observe σJG > σU . But in this case, ceteris paribus, the scheme will affect the expected cost of job loss in [4]. Specifically, we will observe cJG < cU. If the introduction of a JG scheme with σJG > σU causes (ceteris paribus) cJG < cU, how can this be offset so as to maintain the expected cost of job loss and hence previously existing worker discipline? As has already been argued, one possibility is to accept that NAIBER > NAIRU. This involves reducing e in order to make pR,JG > pR,U (via equation [5]) so as to make cJG = cU (in equation [4]). In this case, as previously noted, the JG scheme has a cost measured in terms of the permanently foregone level of private sector employment given by x = NAIBER – NAIRU.

But need this cost materialize? To put it differently, do other things remain equal when a JG scheme with σJG > σU is introduced? Or will the scheme cause additional changes in [4] and/or [5] that will automatically maintain cJG = cU without elevating the NAIBER above the NAIRU? For example, is it possible that the likelihood of regaining private sector employment is higher for JG workers than for the unemployed, because they experience none of the negative effects on employability associated with joblessness (Mitchell and Wray, 2005, p.5)?14

In the model develop above, any qualitative difference between buffer stock employment and unemployment will affect the size of pR,i and ni. To explore this in more detail, suppose that, instead of [5], we write:

,() , 0eRiiippep=< [5a]

In equation [5a], the function pi(.) is now specific to the form taken by a worker’s non-engagement in private sector employment. It could be argued that, for two otherwise identical economies i = JG, U, in which 1 – e constitutes JG employment in the first economy and unemployment in the second, for any arbitrarily given rate of private sector employment e, we will observe:

,,()()RJGJGURUppepep=>= [6]

This is because JG workers are employed and will thus avoid recognized pitfalls of unemployment – such as loss of informal labour market contacts, the depreciation of human capital, and the accumulation of a negative credential (the status of unemployment itself) – thus making them more suitable replacements for insiders than the unemployed. Note that, ceteris paribus, the result in [6] would increase the value of cJG relative to that of cU in equation [4] – perhaps to an extent sufficient to offset the expected-cost-of-job-loss reducing effect of rJG > rU. In this case it will be possible to maintain cJG = cU without any decrease in e – or in other words, we will have NAIBER = NAIRU.

However, further inspection reveals that there are problems with this argument. First, it is questionable as to whether or not [5a] is correct, so that we will actually observe the result in [6]. For example, will JG workers better maintain informal contacts in the private sector by virtue of performing JG work in the public sector? This will depend on the precise structure of the JG scheme and hence the extent to which JG workers interact with private sector employers and employees while on the job. Second, it is not clear that JG workers will avoid human capital depreciation. Firm-specific skills will be lost regardless of whether a worker moves from private employment to unemployment rather than from private employment to JG employment. Specialized skills may also be lost in both cases, unless JG workers perform the same work in the public sector that they performed previously (and aspire to perform in the future) in the private sector. Finally, in a credentialist labour market, it is not clear that JG status will not simply replace unemployment as a negative credential. If workers who engage in buffer stock employment are treated by private-sector employers as part of an undifferentiated mass of ‘labour outside private employment’, then in a credentialist labour market, JG workers will be no better off than the unemployed.

Suppose, however, that by virtue of their continued employment in some capacity, JG workers are better placed to retain general workplace skills than their unemployed counterparts, and that this suffices to ensure that equation [5a] is true and that the specific result in [6] holds. With e constant by hypothesis, the result in [6] must be accompanied by nJG < nU, since the overall rate of unemployment (buffer stock employment) is given by the product of the incidence of unemployment (buffer stock employment) and its duration. In other words, and contrary to the analysis immediately following equation [6], other things cannot be equal in the event that the transition to a JG scheme produces the result in [6]. Note from equation [4] that if nJG < nU, then ceteris paribus, this will reduce the value of cJG relative to that of cU. The question then becomes whether the cost-of-job-loss-increasing effect of [6] outweighs, or is outweighed by, the cost-of-job-loss-decreasing effect of nJG < nU.

Of course, even if the cost-of-job-loss-increasing effect of [6] does outweigh the cost-of-job-loss-decreasing effect of nJG < nU, the resulting net positive impact on the cost of job loss would still need to be sufficiently large to offset the negative impact on the cost of job loss of σJG > σU in order to achieve the result cJG = cU in [4] without any decrease in e.15 In sum, even if other things aren’t equal when the switch to a JG scheme with σJG > σU is effected, the total impact of the scheme on the cost of job loss is ambiguous. It may still be necessary to lower e to prevent a reduction in the cost of job loss. What this suggests is that in and of itself, a JG scheme does not transform capitalism in a manner that necessarily reduces (much less eliminates) the need for there to be a credible threat of imposing costs on workers arising from the loss of private sector employment. In this way, we respectfully disagree with the assertion of Mitchell and Wray (2005, p.7) that such an outcome could only arise from “a very poorly designed JG program”.

Can something else be done to complement the JG scheme and so effect the necessary institutional transformation? Suppose, for example, that:

(,) , ,0cBZZcBZZ=< [7]

where Z denotes the willingness and ability of workers to challenge the terms and conditions of the employment relation, and B is a social bargain index (measuring the degree to which workers participate, with firms, in the determination of the terms and conditions of employment).16 Then it is obvious from [7] that the cost-of-job-loss reducing effects of a JG scheme with σJG > σU could be offset by the successful negotiation of a social bargain. This suggests that a social bargain is a potential complement to a JG scheme. Indeed, in light of the discussion above, it may well be that a social bargain is a necessary complement to a JG scheme, in order for the latter to avoid the political economy complications that arise in a capitalist economy from a decline in the cost of job loss. Of course, social bargains are difficult to both negotiate and reproduce over time, and require that workers have sufficient bargaining power vis a vis firms to influence their institutional form.17 They also require the ongoing commitment of all parties (capital, labour, and the state), as demonstrated by Australian experience with the ACCORD under the Hawke Labor government during the 1980s. The ACCORD succeeded in achieving low unemployment and inflation, even when challenged by a severe nominal exchange rate depreciation that raised imported inflation. Unfortunately, however, employers did not fully engage with the bargain, as a result of which investment in productive activity remained low despite a high profit share (Kriesler and Halevi, 1995, 1997). Nevertheless, a social bargain may be what is required if a JG is to involve the institutional transformation necessary to avoid the political aspects of its operation identified in this paper.

ii) ELR/JG schemes and the theory of the state

ELR/JG proposals make implicit assumptions about the ways in which governments act, as well as to their benign motivations.18 These implicit assumptions can be characterized as an “extreme liberal” theory of the state, according to which the state is always and everywhere a benevolent force for the common good. But while the liberal democratic state may not always be completely captured by capitalist interests (as in a crude Marxian theory of the state), it is ill-advised to assume that it never will be – or that the interests of private wealth will not generally predominate in determining the actions of the state. Indeed, this is only to be expected when – as in JG schemes – the economy is assumed to remain fully capitalistic in its social relations of production.

In this context, the idea that otherwise unemployed workers can and should be employed by the government until effective demand picks up sufficiently to reabsorb these workers in the private sector is potentially problematic. This is because control of the state, and hence the extent to which the state departs from an extreme liberal position of always and everywhere seeking to maximize social welfare, will affect what workers in buffer stock employment are required to do. Consider as an extreme example the structuring of the unemployed in a de facto state managed consortium that occurred in the Arbiter Front, which existed in cartelised capitalist Germany in the 1930s during the Nazi regime. In Germany the economic recovery initiated by the rearmament process was so strong as to generate quite rapidly a situation of virtual full employment, thanks also to the increase in military expenditure. Yet, formally, the role of the Arbeiter Front was precisely to marshal labour according to the priorities of the State. Although it is not suggested that this extreme would be repeated, nevertheless, it provides an important lesson. Hence consider the more recent example of state-directed labour in the US under the presidency of George W. Bush. According to various contemporary media reports, the Bush administration abused the Army Reserve and National Guard in its prosecution of the Iraq war, requiring longer and more frequent tours of duty in combat roles for which neither reservists nor members of the National Guard were properly prepared.19 Alternatively, consider the Community Action programme piloted in the UK under the coalition government of Prime Minister David Cameron. This required the long-term unemployed to work without pay for non-governmental organizations for a period of six months, or else forfeit their unemployment benefits.20 Clearly, the Community Action Programme is quite different from the sort of buffer stock employment scheme proposed by most ELR/JG advocates, not least because it mandates buffer stock employment for those displaced from private sector employment (see also Palley, 2015a, p.20).21 But precisely because of this it serves to illustrate that the intentions and motivations of the state cannot be taken for granted, especially as they may not always align with those of ELR/JG advocates when it comes to the treatment of the (otherwise) unemployed. One can only imagine, for example, how the Trump administration in the US would use a proportion of the labour force that is put at its disposal by a ELR/JG scheme.

As noted by Tymoigne (2013, p.85), proponents of ELR/JG schemes “have a specific vision of what a JG program ought to accomplish” – the realization of which, he adds, “requires highly determined administrators”. The examples provided above suggest that, in fact, power (specifically, sufficient working class influence of the form taken by the state), not just vision and determination, is required for proper realization of an ELR/JG scheme. Only with a sufficiently strong labour movement, and hence sufficient countervailing power to confront the ‘natural’ centre of power in capitalism (private wealth), can a JG scheme be expected to function in the manner envisaged by its advocates. Absent such countervailing power, it may otherwise lead to a super-corporatist state that is anything but friendly to labour (see Kriesler and Halevi, 1995). Consider in this context Chomsky’s analysis, according to which modern capitalism is a system of large corporations whose technostructure is strictly interwoven with the bureaucracy of strong states. A state-managed labour consortium would accentuate the state monopolistic elements outlined by Chomsky and before him by Baran and Sweezy. When Galbraith (1952) wrote American Capitalism in the mid-1950s he had a firm view about the necessity of countervailing powers. There are none, of any significance, today in economies such as the USA, and this is a structural phenomenon not just a passing one. Hence, given that the State is not neutral and accepting the validity of Chomsky’s analysis, a State guided labour consortium will strengthen the monopolistic features of contemporary capitalism in an institutional way.

5. Conclusions

In this paper we have reiterated Kalecki's distinction between the possibility of achieving full employment in capitalist economies, and the overwhelming difficulty of maintaining full employment. Governments can, through the use of appropriate macroeconomic policy interventions, achieve full employment without creating major problems for the economy. Although the achievement of full employment is essentially an economic matter, however, its maintenance becomes a political one. Full employment conflicts with the interests of capitalists as a class. As a result, capitalists can be expected to bring pressure to bear on governments that will make the maintenance of full employment difficult. The main concern of capitalists is that full employment lessens their power in the class struggle with workers, and so reduces their ability to impose terms and conditions of employment that are favourable to their interests (profit and the maintenance of control over the production process). Without changes to the fundamental institutions of capitalism that enable the resolution of some of this conflict without the cost of unemployment, the maintenance of full employment remains an unachievable goal in capitalist economies.

JG or ELR proposals are, by their very nature, intended to provide long-term (structural) solutions to the problem of chronic unemployment in capitalist economies, rather than merely redressing unemployment when it rises during cyclical downswings. They do not achieve fundamental institutional reform in the Kaleckian sense, however. Rather than dealing with the underlying contradictions in capitalism by addressing aspects of class struggle, JG/ELR schemes really only provide an alternative route to the achievement of full employment, not the means for its long-term maintenance.

#### Other countries fill in, blocking climate transition.

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Geopolitics amid climate change

As climate activist Greta Thunberg likes to remind her audiences, when the house is on fire, you stop whatever you are doing and focus on extinguishing. The message is that in our climate emergency all other, petty concerns must be set aside. Applied to international relations, this aspirational thinking has some believing that climate change will imply the end of conflictual geopolitics.44 There are practical reasons why this type of thinking might have gathered momentum. After all, much of the world’s recent conflict history, including war after war in the Middle East in the 1990s and early 2000s, was driven in large part by issues related to petroleum. It might seem logical that once economies, as part of their climate mitigation efforts, switch to renewables like solar and wind, conflictual international relations will become a thing of the past. Unfortunately, that change is very unlikely to represent the end of geopolitics.45

First, the overall premise is wrong, as oil and gas will not disappear any time soon. Rather, we will observe a gradual shift in the energy mix from traditional energy sources toward renewables.46 An effort to fast-track the demise of highly polluting coal, while renewable capacity is still building up, might initially lead to a counterintuitive increase in the use of methane —which is, at least for Europe, another source of conflictual geopolitical relations, in its case with Russia.

Second, as discussed in The New Map by energy expert and Pulitzer Prize winner Daniel Yergin, we are by no means close to seeing the end of geopolitics and power politics in the world. Specifically in the realm of energy, new materials such as rare-earth metals will become focal points of contention. Because these minerals are key inputs to the construction of wind turbines and electric cars, and will become fundamental to our technology, varying levels of access to them will reshape the world order and create new imperatives to ensure the safety of supplies.47 Military strategies and foreign policy priorities will be reoriented toward that goal, just as attention has been focused over the past decades on securing oil supply bottlenecks like the Strait of Hormuz and the Strait of Malacca.48 Indeed, we can already get a sense of this, as the European Union has published, and regularly updates, a list of what it calls “critical raw materials,” necessary to ensure a strong industrial base to the European economy. The US administration did the same, identifying thirty-five critical minerals. For example, cobalt is featured on both lists, as a fundamental mineral in low-carbon technologies like electric vehicles and batteries, including those used every day in smartphones and laptops. Responsible for almost 60 percent of the world’s known reserves and 97 percent of global exports of cobalt is the Democratic Republic of the Congo, suggesting that this country will increasingly enter the spotlight of global power politics.49

Any predictions about geoeconomics must also acknowledge that climate change is not the only megatrend at play; it overlaps with others, including digitalization, automation, quantum computing, artificial intelligence, and big data, all of which exhibit important winner-take-all effects, and in all of which countries will compete. A hugely important megatrend is the rise of China and the re-dimensioning of the United States after roughly a century of global economic and political dominance.50 To the relative “optimists,” like political economist Dani Rodrik, the relationship between China and the United States could evolve into a milder, second Cold War or mutual recognition of existence and differences—an us and them dynamic within a framework of continued reciprocal trade and investment. To the less optimistic, as the global center of economic gravity shifts eastward, the risk of escalation to more open confrontation between superpowers is high.

In his 2017 book Destined for War, historian Graham Allison turned his attention to what he called the Thucydides trap.51 Analyzing the Peloponnesian War that devastated ancient Greece, the Athenian historian Thucydides concluded that “it was the rise of Athens and the fear that this instilled in Sparta that made war inevitable.” How will the rise of a new superpower play out in the twenty-first century? Allison reviews sixteen instances of swaps in economic supremacy between countries over the past five hundred years and paints a grim picture: war broke out in twelve of them. This does not imply that war is inevitable, but suggests the Sino-American relationship will shape geopolitics in decades to come. Climate mitigation and international cooperation will play out against a backdrop of rising geopolitical tension between at least two superpowers, which will inevitably push other countries to pick sides.

The politics of degrowth

The degrowth international vision to tackle climate change centers on the proposition that wealthy countries, who have more than enough, will shrink their economies. By doing so, they will bring down greenhouse gas emissions, reducing the risk of catastrophic climate change. And they will do so to such an extent that space will be opened up for poorer countries to develop, while the overall world economy and global emissions remain within safe limits.

From a strictly moral standpoint, this might sound reasonable and desirable. In light of what we have seen up to now, however, we can state categorically that there is no scenario under which a small set of countries willingly makes such an act of self-sacrifice for the global common good.52 While people are primed for altruism and self-sacrifices, these are directed first toward their in-group, and only later toward others, following geographical discounting. Democratic governments are bound by their citizens’ preferences, and therefore these basic human tendencies define the set of policies that can be considered feasible. Naturally, citizens of a country constitute only one type of in-group. Groups can also arise based on shared culture, kinship, language, religion, geography, and other affinities, as emphasized by Amartya Sen in Identity and Violence.53 Humanity as a whole, however, cannot act as an in-group in the absence of an out-group, and this will not change in the face of climate change.

The fond hope that some countries will actively shrink their economies ignores the reality that these rich countries themselves will remain in conditions of relative scarcity, which will only be felt more acutely as climate change unleashes its negative effects. This implies that the in-group will be in constant need of extra resources, to tackle the needs of the moment, which can be addressing incipient desertification, building infrastructure to prevent flooding, and the like.

In addition, countries themselves, as we have seen, experience relative income theory, and will constantly compare themselves to the past and to other countries. While China’s economy expands at a high clip, you cannot expect the United States to look on with indifference. This is not only based on vague predicaments like “perceptions,” or sinful feelings like envy, but also on hard realities, like the fact that economic might goes hand in hand with military spending and therefore international political influence. This, as we have seen before, generates a sort of geopolitical growth imperative. Reduced resources imply less capacity to protect (or project) a value system, paving the way to reduced self-determination as a people.54

The idea, moreover, that if rich countries shrink poor countries can expand is based on an incomplete understanding of the economics of development. In 2008, a group of nineteen leading policymakers, mostly from developing economies, headed by two economics Nobel laureates, put together The Growth Report, analyzing the experience of thirteen countries that had managed to sustain high GDP growth since the 1950s. 55 Drawing on the input of over three hundred distinguished academics, on top of the personal hands-on experiences of the policymakers, the report sifted out common traits among successful cases. These thirteen cases of “miracle” development, all of which featured sharp reductions in extreme poverty, included China, postwar Japan, South Korea, Indonesia, Malaysia, Brazil, and Taiwan—and a critical feature of literally all of them was fast expansion of exports.56 Note, however, that most exports go to foreign lands that feature consumption aplenty—that is, the rich, growing, industrialized countries.

To recognize this is to see the flaw in the logic of rich countries having to shrink to open up space for poor countries to grow. The whole idea is based on a misreading of the global economy as a zero-sum game. Pursuing a degrowth agenda in the developed world would bring about a collapse of global trade, closing the door to any hope of fast growth in poor countries, turning economic miracles into mirages, and forcing millions to remain in extreme poverty. 57

#### Growth is too locked-in---aff can’t solve transition.

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3.1. Growth ‘lock in’

Economic growth, as an attribute of market capitalism, has structural properties – it is needed to stabilise modern societies as it provides employment, public sector provision through tax revenues, rising wages, and hence social stability (Petridis et al., 2015: 178, Rosa et al., 2017). Economic growth is organised around and shapes a range of tightly coupled structures, including institutions, norms, discourses, culture, technologies, competences, identities, etc. Historically speaking, growth is a fairly recent phenomenon which only picked up in the 19th century together with the industrialisation of Western economies. In a co-evolutionary process, a range of institutions developed which are now coupled to a growth-based capitalist economy, including the nation state, representative democracy, the rule of law and current legal, financial, labour market, education, research, and welfare systems. These are based on philosophies which emerged to justify and give meaning to these institutions, for instance on individualism, freedom, justice, sovereignty, or power. The embeddedness of the growth-based capitalistic economic system in these co-evolved institutions and ways of thinking makes it difficult to transition to a degrowth system because the change of the economic system would need to involve a parallel transformation of those coupled systems. In Luhmann’s words, the constitution of the current system “defuturises” (Luhmann, 1976: 141) the future, it reduces the “openness” of the future; “path dependency” or even “lock-in” are related expressions that capture this idea. Two examples which directly link to people’s wellbeing can illustrate this point: the relationship between welfare states and growth, and between growth and people’s mind-sets and identities.

The satisfaction of needs is influenced by the character of socio-economic institutions, including the ways in which work, welfare, retirement, health, education and family life are governed; as well as by the structure of the distribution of a range of resources that support health and wellbeing. Welfare state institutions play an important role in these areas in high income economies, and they are closely coupled with economic growth (Bailey, 2015). Rising economic prosperity in the post Second World War period provided the resources for establishing welfare states in Europe and elsewhere, and the funding of current welfare state institutions is closely coupled to economic growth as it largely depends on income-related taxes and social security contributions. The positive relationship between economic growth and welfare states in many ways also works the other way round: welfare states support growth by enhancing the population’s health and education levels, providing unemployment and minimum income benefits for people out of work. This helps to increase productivity, maintain consumer demand, and more generally contain and minimise social conflict through redistribution and institutionalised conflict resolution between employers and employees.

Evidently, a fundamental reorganisation of the economic and welfare system would be required under degrowth to sustain investments in health, education, and the reduction of poverty and inequality. This will be crucial in a context of decreasing material and financial resources, because if left unmanaged, this could provide fertile ground for new social conflicts with potentially detrimental implications for wellbeing. Various degrowth authors have made suggestions for alternative welfare institutions and policies, including working time reduction and redistribution as mentioned above (Victor & Rosenbluth, 2007), a basic income (Gorz, 1980; Dietz & O’Neill, 2013: 94), and, from a Marxian perspective, the establishment of a cooperative economy in which businesses will be worker-owned and managed (Blauwhof, 2012). These are all relevant suggestions, however, it should not be underestimated how radical the changes to existing social systems are that these new institutions represent. They challenge deeply entrenched ways of thinking about rights, justice, freedom, private property, individual responsibility, etc. A change of these deeply rooted ‘logics’ on which these institutions are based is not impossible, but very difficult to steer with political means.

This point closely links to the idea that economic growth is not only at the core of various socio-economic institutions but is also very deeply anchored in people’s minds, bodies and identities which is likely to make the transition to degrowth additionally challenging. The concept of social practices helps us understand the ways in which agents (and their mind-sets and bodies) and broader social structures are continuously implicated and reproduced in the performance of social life (Büchs & Koch, 2017: ch. 6). From this perspective, economic growth is not just an external premise that actors can decide to act upon or not, but it is a principle with structural properties that is engrained in ways of thinking and acting – for the most part habitually. Growth thus becomes something that is perceived as ‘natural’ by the vast majority of actors. A range of scholars have argued that the growth paradigm is deeply embedded in people’s minds and bodies (Göpel, 2016; Lane, 1991; Welzer, 2011; Büchs & Koch, 2017: ch. 6). This implies that people’s identities and life goals are closely aligned with the idea of growth – shaped by ideas of social progress, personal status and success through careers, rising income and consumption. Even seemingly alternative goals such as ‘personal fulfilment’ can be infused with ideas that remain tied to the growth paradigm, for instance if fulfilment is sought through high consumption and high emissions practices such as extensive long haul travel or expensive hobbies and gadgets. As Meadows (1999) has pointed out, the most effective, but also the most difficult step in system transformation is the shift of paradigms that underpin the system. Again, since this is difficult to influence politically, it presents a major hurdle for a departure from growth-based systems that also maintains wellbeing.

### Not Degrowth---2NC

#### No political will.

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Now degrowers are not irrational people. The reason why they are pushed in this magical corner is because when they try to “do the numbers” they are led to an impasse. They do not want to allow for significant increase in world GDP because it will, even if decoupling (of which they are skeptical) happens, drive energy emissions too high. If one wants to keep world GDP more or less as now one must (A) “freeze” today’s global income distributions so that some 10-15% of the world population continue to live below the absolute poverty line, and one-half of the world population below $PPP 7 dollars per day (which is, by the way, significantly below Western poverty lines). This is however unacceptable to the poor people, to the poor countries, and even to degrowers themselves.

Thus they must try something else: introduce a different distribution (B) where everybody who is above the current mean world income ($PPP 16  per day) is driven down to this mean, and the poor countries and people are,  at least for a while, allowed to continue growing until they too achieve the level of $PPP 16 per day. But the problem with that approach is that one would have to engage in a massive reduction of incomes for all those who make more than $PPP 16 which is practically all of the Western population. Only 14% of the population in Western countries live at the level of income less than the global mean. This is probably the most important statistic that one should keep in mind. Degrowers thus need to convince 86% of the population living in rich countries that their incomes are too high and need to be reduced. They would have to preside over economic depressions for about a decade, and then let the new real income stay at that level indefinitely. (Even that would not quite solve the problem because in the meantime, many poor countries would have reached the level of $PPP 16 per day and they too would  have to be prevented from growing further.) It is quite obvious that such a proposition is a political suicide. Thus degrowers do not wish to spell it out.

They are  brought to an impasse. They cannot condemn to perpetual poverty people in developing countries who are just seeing the glimpses of a better life, nor can they reasonably argue that incomes of 9 out of 10 Westerners ought to be reduced.

The way out of the impasse is to engage in semi-magical and then outright magical thinking.

Semi-magical thinking (that is, thinking where the objective—however laudable- is not linked with any tools of achieving it) is to argue that GDP is not a correct measure of welfare, or that better outcomes in certain dimensions can be achieved by countries or peoples with a lower GDP (or lower incomes). Both propositions are correct.

GDP does leave out non-commercialized activities that are welfare-enhancing. It is,  like every other measure, imperfect and one-dimensional.  But if it is imperfect at the edges while fairly accurate overall. Richer countries are countries that are generally better-off in almost all metrics, from education, life expectancy, child mortality to women’s employment etc. Not only that: richer people are also on average healthier, better educated, and happier. Income indeed buys you health and happiness. (It does not guarantee that you are a better person; but that’s a different topic.)  The metric of income or GDP is strongly associated with positive outcomes, whether we compare countries to each other, or people (within a country) to each other. This is something so obvious that it is bizarre that one needs to restate it: people migrate from Morocco to France  because France is a richer country and they will be better-off there. American Blacks are worse off than American Whites in all dimensions, not least in terms of their income. This is the background to the Black Lives Matter movement that wants to make Blacks better off and equal in income and health to Whites.

Since this fails, the next approach taken by degrowers consists in pulling out individual cases of countries the have performed exceptionally well on some metrics (like Cuba on health) and those that have performed exceptionally badly (like US on life expectancy) and to argue that a certain desirable outcome can be achieved with much less money. It is indeed true that some countries or some people, despite their lack of income, have achieved excellent things while others have used their income inefficiently or wastefully. But it does not follow from such individual examples that they overturn the regularities described In the previous paragraph. What degrowers do is to first metaphorically run a regression of a desirable outcome on GDP or income, and when they observe that the two are closely correlated, forget about the regression, pull out an outlier, and claim that the outlier shows that the relationship does not exist.

That is clearly wrong too. So the next stage in semi-magical thinking consists in trying to convince people that they are wrongly pursing the Golden Calf of wealth and that much more modest lives would be better, or at least are feasible. To that effect they use baskets of goods and services that allow “modest” standard of living and satisfy all basic needs. But they fail to show us how such “modest needs” are to be implemented: how will people be obliged to consume only so much and not more? In war situations, this is done through rationing. Indeed, one could ration the number of square meters of textile that each household may be able to buy, introduce meat and gasoline coupons and so forth. It has been done many times. But degrowers know that a wartime economy in the peacetime would not be politically acceptable, so they just do the basket calculation, show that it is compatible with “planetary boundaries”, and leave it at that. How we are going to have that basket accepted by people, or implemented despite their will, is not something they desire to be disturbed with.

#### Profit motive.

Andreoni 20 – (Valeria, "The Trap of Success: A Paradox of Scale for Sharing Economy and Degrowth" Sustainability 12, no. 8: 3153. https://doi.org/10.3390/su12083153 2020)//gcd

From a theoretical perspective, if large similarities exist between sharing economy and degrowth, then extensive discrepancies occur in the way in which these two concepts are applied. As reported above, the sharing economy is a worldwide phenomenon rapidly growing across sectors and activities. Degrowth, on the contrary, has been developed through a model of living and academic debate and, up to now, a limited number of applications have taken place [50]. One of the inhibiting factors can be related to the difficulties in applying an alternative model in a system when the profit-oriented logic drives the main socio-economic dynamics. For this reason, a consistent overview of the possible implications generated by large-scale applications of degrowth is still missing. Given the fact that degrowth ideas could generate effective transformations only when adopted by the largest part of consumers, a specific analysis would be needed to investigate the impacts and feasibility of large-scale applications. Within this context, the main objective of the next sections is to hypothesize and discuss a paradox of scale, potentially able to drive the failure of alternative economic models. Given the fact that, from a theoretical perspective, many similarities exist between sharing economy and degrowth, the next approximate is the sharing economy as a large-scale application of degrowth. In particular, the main contradictions existing between the promises of the sharing economy and degrowth, are compared to the outcomes generated by practices. The discrepancies are then used to discuss the feasibility of large-scale applications of alternative economic models, such as degrowth. Being aware that the approximations used in this paper inevitably lead to simplifications, the objective of this analysis aligns with the idea previously discussed in other publications [50,69,70]. Testing the degrowth hypothesis through modeling and empirical assessments can contribute to develop the debate around sustainable transitions to build the bridge between academic discourse, socio-political initiatives, and business environment. 3.2. Promises versus Outcomes of Practices: Analysis of the Socio-Economic and Environmental Impacts Following the approach previously used by other papers [3,30], the main frames used to define the sharing economy are compared, in this section, with the socio-economic and environmental impacts generated by practices. The main objective is to identify existing tensions and to discuss the sustainability challenges of sharing. Starting from the analytical framework reported in Table 2, the main discrepancies existing between promises and practices are reported below. In Table 3, the main elements of discussion are summarized. 3.3. Economic Dimension: Promises versus Impacts of Practices A. Disrupt centralized institutions and large corporations versus creation of oligopolies: According to previous studies [26,28,30,71], the network externalities and economies of scale generated using Internet platforms, has facilitated the development of oligopolies and has reduced the market for small and local enterprises. In line with the examples reported in Table 1, most of the sharing economy’s submarkets tend to be dominated by a small number of companies that earned the dominating status by designing a specific business model or through an early market entry. The large quantity of transactions, needed to compensate the costs of technological investments, has converged the successful platform toward oligopolistic structures, clearly in contrast with the idea of “disrupt centralized institutions and large corporations” included as one of the promises of sharing [72,73]. B. Encourage small and local enterprise versus small-business competition: Instead of promoting small and local enterprises, the sharing economy has resulted in increased competition [74]. The development of sharing accommodation practices, such as Airbnb or Couchsurfing, for example, has provided a substitute for hotel nights in the cheaper segment of the market and has radically changed consumers’ preferences and behavior. According to [75], the users of the sharing economy (generally looking for cheaper solutions, local authenticity, and more unique experiences) have shifted the demand from the traditional hotel industry toward the sharing hospitality. Therefore, the market share of the small and family-run accommodations has been reduced. In addition, the possibility to supply accommodation without the need to be compliant with the regulations affecting the hospitality sector (such as fire, health and safety standards, and taxation) represents an element of unfair competition affecting the small businesses operating in the market. The lower costs associated with a lack of standards and regulations, has contributed to drive a reduction in the average hospitality price. According to data provided by [76], the increased competition among small accommodation providers has generated 8–10% revenue loss in the hotel sector in Austin, Texas. In a similar way, the estimation provided by [77] calculated that the 416,000 guests staying in Airbnb in July 2013 has generated around one million lost room nights for city hotels in New York. On the contrary, large corporations, offering hospitality solutions for business travelers, medium-high income consumers, and package holidays do not seem to be significantly affected [76,77]. C. Empowering individuals by promoting flexible employment opportunities and additional sources of income versus working-related uncertainties: The sharing economy has framed itself as a provider of flexible employment opportunities, where traditional employment contracts are substituted by short-term and freelance work [78]. The main implications of this working structure, however, seem to benefit businesses more than workers. Classifying workers as independent contractors, allow businesses to reduce the costs and to remove the legal liability for accidents arising at work. The lack of pension and insurance, together with income instability and insecurities is, on the contrary, one of the main downsides affecting the workers involved in the sharing economy’s markets [79,80]. In addition, the rapid expansion of this underregulated and underpaid working logic, is also affecting the traditional working markets. When an increasing number of agents get involved in the logic of less security and more flexibility, the overall working conditions can decline [81–83]. As reported by De Stefano [81] (p. 6), “extreme flexibility, shifting of risks to workers and income instability have long become a reality for a portion of the workforce in current labor markets that goes far beyond the persons employed in the gig-economy.” It can indeed be argued that working on collaborative platforms is part of a much vaster trend toward the casualization of labor [84,85]. D. Promote cheaper and easiest access to goods and services and provide opportunities for income redistribution, revenue, and savings versus prices increase, income disparities, and tax avoidance: As reported above, the easiest and cheapest access to goods and services has been described as an opportunity to increase consumption possibilities, particularly for the lowest-income categories. When considering the supply side of the sharing practices, however, the sharing economy can contribute to amplifying the income disparities existing in society [86]. As reported by [87], for example, the additional revenue generated by sharing accommodation benefits people with a middle or upper-income level. That is because, the lower-income categories, characterized by a limited availability of goods to share, are typically excluded from the supply side of the market. Sharing accommodation, has also been criticized for the negative impacts generated on the price of the long-term renting accommodation. The increase in profitability of short-term renting has driven a reduction of long-term renting supply, with consequent impacts for the lower-income categories living in rented accommodation. According to data provided by [88], the average renting price in New York has increased by 11% between 2005 and 2012, with an average income rise of just 2%. The redistributive factors of the sharing activities have also been largely criticized in relation to taxation. According to data provided by [89], the sharing economy was estimated to be worth about $15 billion in 2015 with the potential to grow to £$335 billion in 2025. The amount of tax collected, however, is limited and controversial. Airbnb, for example, is financially located in Ireland, where the money made from transactions taking place all over the world are collected. The lack of clear accountability and the related difficulties to track income, make tax avoidance an element of unfair market competition and a major social issue. The unclear international regulation and the difficulties in public surveillance, creates a clear opportunity for fiscal avoidance, with consequent implications for social disparities and redistribution [28,72]. In addition, as reported by [10], the fact that platforms do not give governments the access to transactions and user data does not facilitate the enforcement of regulations and the design of clear and consistent taxation systems. The creation of institutional boundaries, such as the cap in the number of nights offered in sharing accommodation is, for example, difficult to apply without a clear track of users and suppliers. A. Increase social bonding and collaboration versus social drivers’ reduction: As reported above, the sharing economy has often been described as a tool to generate a new form of collaborations, solidarity, and social bonding [34,90–93]. Researches have, however, highlighted that most of the sharing economy users have no desire to increase community bonds or to share communal links with other members [29]. The ability of platforms to create social connections seems also to have decreased over scale and time. According to studies published by [94,95], when a market expands, economic reasons prevail, and interpersonal connections became more casual and less durable. In a similar way, an analysis investigating the main car sharing motivations highlight that opportunistic and self-interest behaviors play a much more significant role than socio-environmental motivations [79]. Price convenience, savings, and accessibility seem to be the main factors driving most of the consumers’ choices toward sharing economy options [96–98]. B. Increase conviviality and community trust versus discrimination: Instead of increasing social equality and community trust, the sharing economy seems to be characterized by some degree of exclusionary and discriminatory behaviors [40]. Based on studies published [99–102], prejudicial discriminations in ratings and reviews have been found for Afro-American guests and Afro-American Airbnb owners and Uber drivers have reported to be discriminated in terms of longer average waiting times and more frequent cancellations. C. Networking increases versus reduction of face-to-face interactions: When the market expands and more profit-oriented actors enter in the sharing economy’s businesses, the social contacts and face-to-face interactions seem to reduce. The increasing use of online quality ratings, for example, contributes to the declining importance of personal relationships. In addition, the introduction of technological innovations, such as the smart locks on sharing accommodation, provides users with a digital service of check-in and key handover that allow for a complete avoidance of social interactions [10]. According to [103], 75% of Airbnb’s overall revenue come from rentals where the owners do not share the space with users. The initial idea of social connections, interactions, and trust have been taken over by activities operating with a small degree of social and face-to-face interactions. D. Promote the use of participative online resources such as open access, open sources, and collaborative platform versus income, cultural, and aging constraints: The development of information and communication technologies has been considered as an opportunity to facilitate the use of participative online resources and to democratize the access to information. However, the difficulties that a relevant percentage of the world population are experiencing in catching-up with technological development is de facto an element of exclusion for a large amount of people with income, cultural, and ageing constraints [104]. When applied to the context of the sharing activities, this general downside of information and communication technologies, can then exclude a specific group of people from participating in sharing exchanges. According to [75], for example 53% of the users are under 40 years old and across all the sharing economy industries the usage seems to decrease with an increasing age. 3.5. Environmental Dimension: Promises versus Impacts of Practices A. Reduce consumption versus consumption increase: As highlighted by [105], a relative cost reduction can increase the overall market demand. In the sharing economy, different elements can contribute to generate a “rebound effect” detrimental for resources: • The development of the sharing economy platforms and the creation of new markets expand the volume of commerce and inject additional purchasing power into the economy. In addition, the development of “on demand” economy (e.g., Uber), where the consumer creates new capacity by arranging a service that would not have been made in the first place, is in contrast with the idea of reducing the overall level of demand. The reduction of prices generated by (i) increasing competition, (ii) reduced dependency on ownership, and (iii)reduction of searching costs, can contribute to the rise of consumption [10, 40,106]. • The easiest and cheapest access to goods and services can stimulate unsustainable and indulgent consumption [107,108]. The cost reduction and the accessible increase related to car sharing practices, for example, can generate additional journeys and reduce the public transport demand. The possibility to cover a part of the travelling cost, offered for example by Blablacar and Kangaride, can change the individual decision on the travelling mode and, as reported above, increase the demand for less sustainable practices [4,109]. • The large amount of information made available by the use of the Internet, provides an extensive source of evidence about past usage patterns and consumers’ preferences. The online companies, with an easy access to consumer’s information, can use targeted advertising and tailored promotions to increase sales and market share. In addition, a tension also exists in relation to the fact that city cycle schemes are usually financed through advertising of large and multinational corporations, as Santander in London or Coca-Cola in Belfast. B. Reduction of energy and material demand versus increased use of energy and resources: A lack of clear data investigating the environmental impacts of the sharing practices make it difficult to analyze the transition toward a more sustainable economy. At the present, no clear evidence exists around the reduction of energy and material demand [10]. On the contrary, a study published by [110] shows that the ecological footprint of e-business is greater than conventional shopping. C. Promote reuse and responsible consumption versus lack of care: The short-term social relationships characterizing most of the sharing economy activities and the fact that consumers are paying for a temporary service, generally lead to a lack of caring attitude and reduce the incentives to treat products gently [4]. In line with the idea of moral hazard and information asymmetries, involved with shared resources [111], the deterioration rate of goods can be higher than in the case of a private ownership. In addition, recent studies suggest that users’ environmental motivations are often less important than the economic ones [112,113]. 4. Discussion: Paradox of Scale and Future Research Directions Based on the analysis reported above, the main findings of this paper can be summarized by the fact that the recent developments of the sharing practices seem to be in contrast with the theoretical frameworks used to define the socio-economic and environmental characteristics of sharing. When the scale expands, a profit-oriented logic seems to prevail and the idea of a more sustainable and socially connected economic system fails to be delivered. In particular, the profit opportunities are attracting an increasing number of for-profit businesses that use the socio-environmental and egalitarian statements as a way to increase the market share. In addition, the use of information and communication technologies, the related reduction of interpersonal connections, and the exclusion of people unable to catch up with technological development, impose constraints on social interactions and participation. As a result, the impacts and goals of the sharing economy seem to converge toward those of the traditional economic practices, where profit opportunities prevail on socio-environmental motivations. As previously highlighted by other authors [26,28], the theoretical pathway to equity and sustainability has been successfully reframed as a new form of neoliberal capitalism. Within this context, the findings of this paper highlight the risk of a paradox of scale, where the sharing economy fails to deliver as a consequence of success. If from one side, the more sustainable behaviors can generate effective changes only when applied by the majority of actors, on the other side, large-scale applications and expansion risk converging toward the traditional economic practices. This sort of trap is also highlighted by the recent path taken by the development of some local currencies. Initially organized as a way to sustain local business and promote a more responsible consumption, some of the local currencies have today expanded to include franchising and corporation activities. An example is provided by Colu, the Liverpool Local Pound, where franchising accounts for more than 10% of the businesses listed in the website. In addition, the percentage discount offered to consumers that purchase products by using the local currency is a stimulus for consumption increase, clearly in contrast with the idea of responsible consumption and sustainability. The use of virtual coins and the necessity to have mobile phones and internet connection also represent a factor of exclusion for the oldest and the less wealthy categories of society that in contrast would be those that could benefit the most from the development of a local and fairer economy.

#### Their ev only says transition’s possible – but more likely to fail – which is offense

Damir Tokic 12, Ph.D. in International Business from the University of Texas, December 2012 “The economic and financial dimensions of degrowth,” *Ecological Economics,* Volume 84, p. 49-56

3.2. Stock Market Crash Triggers Further Deleveraging (Contagion)

The stock market crash in response to the degrowth scenario would have a significant and immediate effect on other financial assets, physical assets, and the broader economy primarily due to massive deleveraging, which we define as the forced repayment of debt by liquidating equity (a form of market contagion). For example, investors and speculators buying stocks on margin (with borrowed money) would be forced to sell their stocks as well as other equity in their accounts to maintain their required initial margins. Specifically, brokerage firms allow investors to purchase stocks with 50% cash collateral and 50% margin, while futures brokers allow traders to speculate in stock index futures with 5–10% cash collateral. In both cases, as the value of stocks (account equity) falls below the required level (the maintenance margin), margin investors receive a margin call to either liquidate their positions or deposit more funds into their accounts. Since investors rarely respond to margin calls and deposit more cash, all their positions can be forcefully liquidated, which includes their positions in other asset classes such as commodities (energy, metals, agriculture), risky bonds, and even high-yielding currencies. As a result, the stock market crash, and the resulting forced deleveraging, are likely to cause sharp price declines in all risky assets. Second, public corporations might also be forced to deleverage as the falling stock prices significantly increase their market debt-to-equity ratios, primarily due to the collapse of their market equity value (collateral). As a result, corporations might be forced to sell some of their assets to prepay some of their debt, which essentially creates a fire-sale scenario and reduces values of commercial assets such as commercial real-estate, property, plants, equipment and other. Third, local and national governments also might be forced to liquidate some of their assets (landmarks, islands, land) to prepay some of their debt if the stock market crash results in lower tax revenues or falling prices of other assets held in their portfolios. The common theme among these different forms of deleveraging is that lenders (brokers, banks, bondholders) face increased credit risk due to the falling prices of the borrower's collateral, which can actually lead to a systemic credit crunch, whereby any form of new financing becomes limited and expensive. The broad economic implications of a credit crunch extend to individuals via the reduction of credit limits on consumer credit cards, higher interest rates, higher standards of lending, and larger down-payments, which essentially results in consumer deleveraging and, thus, potentially has the most significant effect on the real economy.

3.3. Deflation

The most lethal effect of the stock market crash and the resulting deleveraging on the real economy (due to the expectations of the degrowth scenario) could potentially emerge in the form of a vicious cycle of deflation. Deflation is a state of economy characterized by chronic negative inflation, resulting from the general collapse of demand, as explained by Bernanke (2002). As we previously discussed, a stock market crash usually leads to forced deleveraging, which causes falling prices of commodities and reductions in consumer and business credit, all of which translate into falling goods prices. The falling goods prices cause delayed consumption (why buy a car now if you can buy it cheaper in a few months?), which contributes to collapsing demand and starts the vicious cycle of deflation. Specifically, delayed consumption leads to reductions of inventories and companies are forced to cut and delay production, which causes more layoffs and increases the unemployment rate. The increase in unemployment further deteriorates consumer demand, which magnifies the credit crunch and results in even lower prices, and the vicious cycle of deflation continuous.

The current Federal Reserve Chairman Ben Bernanke explained the dangers of deflation in a 2002 speech and the extraordinary policy response necessary to combat deflationary pressures. In his view, fiscal policies can be used by governments to increase public sector demand by spending on social programs, jobs creation, infrastructure projects, and others. However, the key policy tools against deflation are at the disposal of the central banks via the extraordinary monetary policy tools. Specifically, Bernanke (2002) mentions that the Fed can always generate a positive inflation rate, even when the nominal short term rates reach zero percent, by engaging in quantitative easing (money printing press) and possibly by intervening in foreign currency markets and devaluing the domestic currency via other currencies and real assets, both of which generate positive inflation. In fact, the Fed can engage in asset purchases and essentially buy assets with the newly-created money to boost asset prices and break the deflationary spiral, which is essentially the last line of defense for capitalism. However, even Bernanke (2002) acknowledges that these extraordinary policy responses to deflation are only theoretical and unproven in practice, and thus, deflation should be avoided at all costs.

3.4. Degrowth and Economic Performance

Next, we turn our attention to O'Neill's (2012) illustration of degrowth in Fig. 1 and critically evaluate the underlying assumption that the degrowth phase is sustainable. More specifically, we analyze whether it would even be possible to steer the economy to a stable 2–3% negative GDP growth rate for a lengthy period of time, as the proponents of degrowth suggest. Our analysis starts with the proposition that fundamental stock market valuation would significantly decrease given the expectations of the degrowth scenario. As a result, given that the stock market is forward-looking, investors would sell their stocks to protect their wealth well in advance of the proposed degrowth scenario, which would essentially cause the stock market to crash—a significant loss of value in a relatively short period of time. Next, we propose that the stock market crash would cause further deleveraging by investors, corporations, and consumers, which would likely create a credit crisis and invigorate deflationary pressures. Finally, we propose that the resulting deflationary pressures are likely to turn into a vicious cycle of deflation, significantly affecting the real economy via delayed consumption and production, which would result in high unemployment rates. It is important to note that these economic events (the stock market crash, deleveraging, and deflation) can happen very quickly due to market contagion. As a result, we suggest that the real economy would implode, or sharply correct in a relatively short period of time, even with a slight indication of the degrowth scenario.

Following (or ideally during) the economic implosion (which happens quickly), we would logically expect a fiscal and monetary policy intervention as explained by Bernanke (2002). As a result, assuming that Bernanke is correct, the extraordinary monetary policy intervention would eventually create positive inflation and stabilize the economy and asset prices. Consequently, given pent-up consumer demand during the crisis and the lean inventories following the deflationary “scare”, we would expect a new long-term cycle of positive economic growth to resume. Thus, our key argument is that a gradual long-term negative GDP growth (as illustrated in Fig. 1) is unsustainable and not possible to achieve in a market economy. Rather, we argue that it is more likely that the economy would quickly adjust to long term negative GDP growth expectations, or implode, which would be followed by another long-term growth cycle, given the policy intervention during the implosion.

In a broader sense, it is unlikely that even ecological concerns can be addressed by degrowth as illustrated in Fig. 1. First, the environmental issues would be less important during the economic implosion, which could delay the development of sustainable alternative energy. Second, while the environmental picture could temporarily improve during the economic implosion, the carrying capacity will eventually be exceeded yet again as the economic growth resumes, as we illustrate in Fig. 2. Third, given that crude oil is an investable asset, it is likely that the price of crude oil would correct during the implosion due to deleveraging, deflation, and the decrease in demand for energy, which are likely to be only temporarily positive for ecological concerns. However, the temporary lower crude oil prices would also put climate change issues on the backburner, and thus, limit the interest in development of alternative energy projects. Thus, in the long run, the economic implosion would be a net negative for ecological concerns. As soon as the economy rebounds, energy consumption growth would resume and eventually exceed the carrying capacity, this time perhaps even more damaging for the environment due to the significantly delayed development of effective alternative energy sources.

### Not Degrowth---AT: Van Den Berg 18

#### Doesn’t solve---ELR only spurs degrowth when combined with explicit policies restricting harmful production.

Hendrik Van Den Berg 18, Professor Emeritus at the University of Nebraska, and continues teaching at Mount Holyoke College in Massachusetts, “Getting Serious About the Limits to Growth: ELR and Economic Restructuring Under Decroissance: Macroeconomic Policy and Environmental Realities: Can We Have Full Employment Under Decroissance?,” Full Employment and Social Justice, edited by Michael J. Murray and Mathew Forstater, Springer International Publishing, 2018, pp. 83–108 DOI.org (Crossref), doi:10.1007/978-3-319-66376-0\_4

It is also important to recognize that ELR cannot, by itself, shift production towards low-throughput production. It must work in combination with explicit curbs on high-throughput activity. As Popp (2002, 2004) makes clear, merely providing incentives for alternatives will not make them happen. Harmful activity, or what Daly (2014) refers to as uneconomic production, must be explicitly restricted, discouraged, or banned outright. To get the donkey cart to its destination, there must be a road, a carrot, and a stick. ELR provides elements of all three, but it needs help in the form of carbon taxes, political activism, holistic economic analysis, and functional democracy, among many other institutional supports.

### Not Degrowth---Crisis Bad

#### Crises cause populism, not degrowth—turns case

Manuel Funke & Christoph Trebesch 17, both work at the Institute for the World Economy, “Financial Crises and the Populist Right,” ifo DICE Report, December 2017, https://www.ifo.de/DocDL/dice-report-2017-4-funke-trebesch-december.pdf

SUMMARY AND CONCLUDING REMARKS

The main insight from this short piece is that financial crises of the past 30 years have been a catalyst of rightwing populist politics. Many of the now-prominent right-wing populist parties in Europe, such as the Lega Nord in Italy, the Alternative for Germany, the Norwegian Progress Party or the Finn’s Party are “children of financial crises”, having made their breakthrough in national politics in the years following a financial crash. We also find that the 2008 crisis triggered a wave of governments in which right-wing populists gained power, often as a coalition partner.

As discussed, the crisis is just one of many potential factors explaining the recent successes of right-wing populism in Europe and beyond. Other drivers such as “cultural backlash”, the impact of globalization, rising inequality, and the refugee crisis of 2015 surely played a critical role too. However, “the rise of the right” in Europe since 2008 cannot be fully understood without considering the impact of the 2008 and 2011/2012 financial crises.

To conclude, one can ask what makes financial crises so politically disruptive? Why do financial crises lead to the birth and success of extremist politics, whereas other types of economic downturns do not? A first potential explanation is that financial crises are perceived as inexcusable events that result from a failure of policies and regulation, rather than from an external shock. This leads to distrust in government and mainstream politics. Secondly, financial crises typically trigger creditor-debtor conflicts (Mian et al. 2014) and a rise in income and wealth inequality (Atkinson and Morelli 2010, 2011) to levels not observed in normal recessions. Thirdly, we know that financial crashes often involve large-scale bank bailouts and these are highly controversial and unpopular (e.g., Broz 2005). Such bail-out initiatives give traction to extremist ideas at the political fringe. In this environment of distrust, uncertainty and dissatisfaction, right-wing populists have learned to gain votes by offering seemingly simple solutions to complex problems, and by attributing blame to minorities or foreigners.

#### Change is alienating. Forcing degrowth backfires by causing people to associate it with austerity. Koch votes AFF.

Milena Büchs & Max Koch 17, Milena Büchs is Associate Professor in Sustainability, Economics and Low Carbon Transitions at the University of Leeds, UK; Max Koch is Professor of Social Policy at Lund University (School of Social Work), Sweden, “The Generation of Human Wellbeing: Social Practices Theory,” Postgrowth and Wellbeing, Springer International Publishing, 2017, pp. 89–102, DOI.org (Crossref), doi:10.1007/978-3-319-59903-8

While the possibility of change is thus inherent in the concept of social practices, the stabilisation of some dimensions of practices over time, at least relatively speaking, is equally part of the social practice concept. As discussed above, the existence of practices implies the formation of close links between their constituent structures. For example, the performance of practices that involve certain technologies is also attached to certain competences, norms and worldviews which become tightly coupled and hence more difficult to shift away from, as has been demonstrated using examples of car-based mobilities (Urry 2004) or the invention of showering (Shove 2003). Stability of some dimensions of social practices provides orientation and an extent of predictability of how oneself and other people are going to act in the future, providing a framework within which fexibility is possible. This orienting function of some dimension of practices is likely to be an important condition for people to form identities and relationships—key ingredients for wellbeing.

The orienting role of social structures might explain why some research has found that across 174 countries, several measures of wellbeing and social performance, including life satisfaction, health, safety and trust, voice and accountability, were highest in periods of economic stability, but lower in times of GDP growth or contraction (O’Neill 2015); or that life expectancy can be negatively affected by both rapid economic growth and contraction (Notzon et al. 1998; Szreter 1999). It also connects with a thought expressed by Wolfgang Streeck who predicts that capitalism will come to an end as a result of three mutually reinforcing trends—declining growth, rising inequality, and rising public and private debt. His notes about possible implications of societies that fnd themselves in such a phase of fundamental transition ring many alarm bells for considerations about future wellbeing:

“The breakdown of a social order in the absence of a successor may give rise to (...) a society devoid of coherent institutions capable of normalizing the lives of its members and protecting them from accidents and monstrosities of all sorts. Life in an interregnum is characterized by a lack of structural determinacy, making it unpredictable. Its society fails to provide its members with reliable templates around which they may organize themselves: instead it demands constant improvisation, making individuals substitute strategy for structure—offering rich opportunities to oligarchs and warlords of all sorts while forcing the majority to live in insecurity, uncertainty and anomy”. (Streeck et al. 2016: 169)

A further important issue that might explain the stabilisation of some dimensions of social practices concerns the role of power. As mentioned above, one of the meanings that relate to the idea that social practices draw on and constitute social structures is that resources are unequally distributed in the performance of practices—and often very stably so. This includes the unequal distribution of wealth, income, knowledge, worldviews, competences, as well as access to technologies, infrastructures and social networks. The unequal distribution of these resources establishes unequal power positions in society where those who beneft from the set-up of the current system tend to be more powerful and will hence have an interest and likely greater capacity to prevent the system from changing. The stabilisation of these layers of social practices can sometimes make their change “from the bottom-up” challenging. One example relates to the role of the corporate media in the 2016 US election campaign, where the three American television network broadcasts ABC World News, CBS Evening News and NBC Nightly News gave Trump more than twice as much coverage (1144 stories) as Clinton (506 stories) and nearly ten times more than Bernie Sanders (115 stories) (Tyndall Report 2016). Financial, political and discursive power merged to create a context which lastingly shaped voter behaviour.

What then are implications of ideas that social practices draw on and establish closely coupled structural dimensions and that the orientation that some dimensions of practices provide might support wellbeing? The frst idea of closely coupled structural dimensions of social practices implies that for a smooth transition from one formation of social practices to another to happen, the different structural dimensions of social practices would simultaneously need to change and reconnect to each other.

The question then becomes under which circumstances this is likely or unlikely to happen. What is clear is that it cannot be taken for granted that structural dimensions change with similar speeds in phases of rapid transition. For instance, we can imagine a situation in which the economy and the goods and services it provides transform rapidly when growth halts or contracts, supply shortages emerge, important infrastructures are interrupted through extreme weather events or power failures, while social norms, discourses, worldviews and other institutions respond more slowly. The question then becomes how unequal speeds of change of constituent social structures in phases of social transition might impact on individual and collective wellbeing. Some examples from sociological and psychological research suggest that different speeds of changing social structures can establish misalignments and disruptions of social practices which can in turn negatively infuence health and other wellbeing outcomes. For instance, in a classical study, Durkheim presents suicide at least partly as an outcome of a failure of cultural resources to provide meaning and orientation in the context of other, more rapid social changes (Durkheim 2006; Vega and Rumbaut 1991: 375). Another relevant idea for this discussion has been formulated by Bourdieu with what he called the “hysteresis effect”. Here, Bourdieu emphasises that, especially during phases of social transition, people’s habitus and “objective” social circumstances can become disjointed: as a result of hysteresis, dispositions can be “out of line with the feld and with the “collective expectations” which are constitutive of its normality. This is the case, in particular, when a feld undergoes a major crisis and its regularities (even its rules) are profoundly changed” (Bourdieu 2000: 160). This can contribute to a deterioration of people’s wellbeing as it makes them feel “out of place” or let them be perceived that way and “plunges them deeper into failure” (Bourdieu 2000: 161) because they cannot make use of new opportunities or are mistreated or socially excluded by others. Empirical research which partly builds on the idea of hysteresis has shown that wide-ranging organisational change can have a range of negative effects on people’s health and mortality (Ferrie et al. 1998; McDonough and Polzer 2012).

All this suggests that for wellbeing outcomes to be maintained or even improved in the context of postgrowth will rely on the emergence of new practices—and simultaneous transformation and new coupling of a variety of social structures implicated in practices. One example is the required change of dominant cultures, worldviews and identities which are currently rooted in the growth paradigm as discussed in the previous section. This is important because these cultural structures not only frmly establish the growth paradigm in economic theory and practice (Davey 2015), but also encompass socially dominant conceptions and practices of wellbeing. With Welzer (2011), it can be argued that the diffculties associated with the transformation of “mental infrastructures” have so far been underestimated in the postgrowth literature. This transformation will require a fundamental reorientation of culture and embedded wellbeing conceptions towards the fulflment of basic human needs, framed by concern and care for the wellbeing of future generations. This seems like a utopian vision from the point of view of current growth-oriented consumer culture, and the question is whether such cultural change can develop fast enough to align with the required changes of scales of resource use, pollution output and associated institutional changes. Daly and Farley (2011: 12) remind us that social change has been extremely slow for most of human history—suffciently slow for culture to adjust to these changes. Worryingly, they point out: “most likely we will have to change our cultural institutions and values in response, particularly the economic institutions and values that have led to this state of affairs. Since there is certainly some limit to how fast we can adapt culturally, we need also to consider seriously how to slow down the rate of change that is forcing the adaptations. It is worth remembering that not all change is desirable and that even desirable change can be too fast” (Daly and Farley 2011: 12; also see Polayi 1944). If these concerns are valid, our capacity to achieve the necessary societal transformations within required timescales without compromising current (and near future) generations’ wellbeing is likely to be challenged.

While the emphasis here on the need for cultural change that is in alignment with a postgrowth society is just one example out of several other structural dimensions of practices that would need to change, it is likely to be an important one as it connects to a range of other structural dimensions. For instance, cultural change is also required for institutions (norms and policies) to be established that ensure a fairer distribution of wealth, resource use and emissions within and across countries, as well as across generations.

### Not Degrowth---Crisis Bad---AT: Koch 20

#### Koch says crises enable alternatives. They conveniently left out that those alternatives would be fascist!

Koch ‘20 [Max; 5/30/2020 Professor of Social Policy at the Lund University School of Social Work, Ph.D. in Sociology from the Free University Berlin; "Structure, action and change: a Bourdieusian perspective on the preconditions for a degrowth transition," Sustainability: Science, Practice and Policy, Volume 26, Issue 1, p. 4-14]

According to Bourdieu, the chance that the customary correspondence between structure, habitus, and practice breaks and that alternative ways of thinking and acting become hegemonic depends upon the existence of a crisis. In this event, the economic, political, cultural, and symbolic structures of society undergo a process of transition leading to a “collapse, weakening, or obsolescence of traditions or of symbolic systems” that provided the principles of people’s “worldview and way of life” (Bourdieu 1991, 34). Crises can first take the form of a crisis within the ancien régime: the institutional structure of the old social order turns out to be flexible enough for the actors to enter new kinds of alliances (on welfare and social inclusion, for example), that is, without questioning its fundamental principles. Hence, the social order, including its corresponding values, habitus forms, and so forth is maintained based on some gradual or incremental change (Mahoney and Thelen 2010); second, crises can take the form of a crisis of the existing social order. Its institutional structure turns out to no longer be capable of giving a realistic future perspective to satisfying the needs, wishes, and desires of a majority of citizens. We may conclude with Bourdieu that in this event, the traditional correspondence of habitus, practice, and structure breaks, making the economic, social and symbolic institutions of society crumble. At once, the social specificity of relations, which is normally taken for the natural order of things and goes largely unquestioned, becomes transparent, and the simple formula of societal reproduction according to “doxa” – structure-habitus-practice-structure – ceases to apply. To the extent that what is normally unconscious becomes conscious, the habitus stops generating social practice and is gradually replaced by other organization principles such as rational calculus and conscious action. Bourdieu (1977; 1990a; 2000) refers to this possibility as “heterodoxy” or “heresy.”

However, while alternative discourses and heterodox social forces gain ground during a crisis of the social order so do those that opt for its authoritarian defense, which may include the marginalization or abolition of democratic institutions and civil rights (Figure 2). Bourdieu calls this alternative exit strategy of crisis “orthodoxy.” In contrast to heterodoxy, which tends to “open up the future,” orthodoxy refers to periods of restoration, in a sense to “stop time, or history, by closing down the range of possibles so as to try to induce the belief that ‘the chips are down’ for ever” (Bourdieu 2000, 235).6

Much evidence indicates that we are in the midst of a multidimensional crisis which is unlikely to be resolved under the institutional arrangements of the current growth strategy of finance-driven capitalism (Koch 2012; Buch-Hansen 2018; Overbeek and Apeldoorn 2012). According to the late Max-Neef (2014, 17), “never before in human history [have] … so many crises converged simultaneously to reach their maximum level of tension.” There are at least four dimensions of this crisis. First, while the negative economic and social consequences of the 2008 financial crisis are not yet overcome, a new financial crisis is already looming (IMF 2016, 1). Political economists such as Gordon (2012) take the associated massive levels of public and private debt as a strong “headwind” for the promotion of future material prosperity. In fact, even scholars and policy makers outside the degrowth camp would be well advised to consider the possibility that economic growth rates are likely to be small for the foreseeable future and plan accordingly. Second, massive and growing inequality has resulted in a social crisis that leaves growing shares of the population in the rich countries unable to satisfy their basic needs (OECD 2015), while the wealth of the richest household groups continues to surge. Third, the environmental crisis described in the introduction above undermines current and future living conditions for human beings and other species and threatens to end human civilization as we know it (IPBES 2019). Finally, there is a crisis of political representation (Crouch 2004), culminating in events such as Brexit and the election of Donald Trump. More generally, this crisis dimension is expressed through the weakening in support and power resources of once-strong political parties such as Social and Christian Democrats in several European countries as well as the simultaneous inroads that rightwing populist parties have made in a range of democracies in the global North.

[THEIR CARD ENDS]

This multidimensional crisis suggests that the Western European postwar class compromise, including its promise of permanent and increasing material prosperity based on the provision of economic growth (Lutz 1989), has come to an end. Yet whether this crisis of the economic and social order will eventually result in an overcoming of the capitalist growth economy via an ecological and social transformation and degrowth is far from certain. This is because the crumbling of doxa has, historically, only rarely led to its replacement by heterodox thought and practice. More often than not, the crisis of an established order has resulted in a new kind of orthodoxy where dominant interests are defended by replacing democratic rule by authoritarian rule and the use of force. New types of rightwing populist movements combine a conservative critique of finance-driven capitalism with chauvinistic and xenophobic slogans, and provide the popular basis for an authoritarian “solution” to the crisis that we may call “Europe first”7 one in which the rich countries’ “way of life” is defended virtually to the last minute. This is achieved by using military power, closing borders, and leaving the victims of climate change to their fate. Whether the current crisis will result in “Europe first” or an “ecological social transformation” will not least depend on the availability of “hands-on” eco-social policy strategies. In other words, it will be necessary to forge ideas for both single policies and their synergy in the short and long-term, to which critical researchers and activists can contribute, and involving both “bottom-up” civil society mobilization and “top- down” policies of an active state (Hirvilammi 2020; Koch 2020).

[SECTION ENDS]

### Not Degrowth---AT: Forced Decarbonization

#### ‘Forced’ decarbonization doesn’t solve warming.

Jack Copley 22, School of Government and International Affairs, Durham University, “Decarbonizing the Downturn: Addressing Climate Change in an Age of Stagnation,” Competition & Change, 08/16/2022, p. 102452942211209

Perverse dynamics

The mainstream decarbonization vision calls for a massive investment boom, the likes of which have proven difficult to generate since the 1970s because of weak economic dynamism, itself a result of the contradictory nature of capitalist development. This gives rise to a series of dilemmas, or what Heun and Brockway (2019) term ‘perverse dynamics’, for states seeking to tackle climate change.

Slowing growth, slowing emissions

As critics of growth observe, an economy geared towards endless expansion will test the limits of the natural world. Whether this tendency can be overridden with regards to climate change depends upon the nature of the relationship between growth and carbon emissions. Significant debate exists over whether GDP can be ‘decoupled’ from emissions. There are two forms of decoupling. Relative decoupling indicates that GDP increases at a faster rate than carbon emissions. Absolute decoupling, which matters most for climate change, signifies that GDP increases with zero rise in carbon emissions. While there has been a ‘steady long-term trend towards relative decoupling’ within the world economy, it is not clear that absolute decoupling can be achieved at a pace necessary to meet the Paris goals (Hickel and Kallis, 2020: 8). As a recent systematic review of the scientific evidence stated, ‘a continuation of past trends will not yield absolute reductions of resource use or GHG [greenhouse gas] emissions’, indicating the stubbornly tight association between growth and carbon emissions (Haberl et al., 2020: 34).

Given that economic growth is now and has historically been the key driver of emissions, economic stagnation helps to lower emissions by reducing energy use. The only significant declines in global carbon emissions in the last 30 years have coincided with steep reductions in growth, that is, the USSR’s collapse, the 2008 crisis, and the COVID-19 pandemic (Le Quer´ e et al., 2020 ´ : 650). Furthermore, a study of 18 countries that managed to ‘peak and decline’ their carbon emissions in the period 2002-2015 demonstrated that one key driver of this process – accounting for 36% of the fall in emissions on average – was decreased energy use that resulted in part from ‘low growth in GDP of around 1%’ (Le Quer´ e et al., 2019 ´ : 215). As the GDP growth rate approaches zero, absolutely decoupling growth from carbon emissions becomes more feasible (Schroder and Storm, 2020). This is a core insight of the degrowth literature (Mastini et al., 2021: 3).

Frustrated decarbonization of stagnant industries

Nevertheless, as Le Quer´ e et al. (: 217) point out, even the reductions in carbon emissions achieved ´ by the slow-growing advanced economies ‘fall a long way short of the deep and rapid global decarbonization of the energy system implied by the Paris Agreement’. Contemporary stagnation is, on its own, completely inadequate to address climate change. In fact, this economic slowdown impedes decarbonization efforts in various ways.

First, stagnation obstructs energy efficiency gains. High growth is associated with strong gains in energy efficiency: ‘rising GDP means more money available to invest in new final-to-useful machines and equipment with higher energy efficiency’, and this energy efficiency in turn powers more GDP growth (Heun and Brockway, 2019: 11). Low growth is thus associated with poor gains in energy efficiency, as less funds are available for investment in new technological capacity, impeding future growth. Consequently, stagnation is a disaster for the conventional vision of decarbonization because, as discussed earlier, ‘energy efficiency is firmly embedded as a key mitigation strategy within Integrated Assessment Models’, ‘contributing up to 40% of the envisaged reductions in global greenhouse gas (GHG) emissions over the next two decades’ (Brockway et al., 2021: 1).

Second, stagnation obstructs the decarbonization of industrial processes. This problem is clearly visible in heavy industries, which best typify the self-undermining dynamics identified by Capitalist Contradictions explanations. Steel is a key driver of climate change, responsible for 7–9% of global carbon emissions (World Steel Association, 2019). In most steel production, molten iron is extracted from iron ore in a blast furnace at high temperatures generated by the burning of coke, which releases CO2. There are several options to decarbonize this process. The most viable long-term solution, according to McKinsey (Hoffman et al., 2020), in addition to the use of scrap steel, is to use ‘green’ hydrogen to create ‘direct reduced iron’ that can then be processed in an electric arc furnace.

The problem, the Financial Times reports, is that the cost of ‘overhauling a monolithic and slowmoving smokestack industry … could run into hundreds of billions of dollars — not easy in a business plagued by chronic oversupply and volatile swings in profitability’ (Pooler, 2021). Indeed, from 2000 to 2014, global steel capacity more than doubled, as non-OECD economies expanded their production, flooding markets with steel and outpacing demand (OECD, 2015: 7). The result has been profound stagnation, argues the Global Forum on Steel Excess Capacity (2017: 2): ‘The situation has become particularly acute since 2015. It depresses prices, undermines profitability’, and ‘undermines the fight against environmental challenges’. This endangers efforts to retire or retrofit carbon-intensive plants and build carbon-neutral ones: ‘It takes years to plan, get permits for, finance, and build a steel … plant, and once built, they can last for 25–50 years with proper maintenance. The current oversupply of steel plants … naturally serve[s] to slow the development of newer, more innovative facilities’ (Bataille, 2020: 13). In order for steel firms to discontinue existing plants and invest in decarbonized processes, the price of green hydrogen must fall below a certain threshold. Such market conditions, McKinsey estimates, may be reached between 2030 and 2040, though only in Europe, which accounts for 11% of global steel production (Hoffman et al., 2020).

The case of steel is illustrative of the profound challenges of decarbonizing stagnant industries, especially those with high capital intensity. The automobile industry displays similar characteristics. In response to global competition, this sector has developed massive economies of scale and requires expensive fixed investments. For such investments to be profitable, manufacturers must ensure a high and stable volume of sales. But the industry’s huge productive potential regularly outstrips demand, leading to endemic overcapacity and falling prices (Holweg and Oliver, 2016). The result has been secularly falling profitability over the long run: ‘typical profit margins were 20– 30% in the 1920s, 10% in the 1960s, and lower than 5% in the 2000s’ (Mattioli et al., 2020: 5). Such precarious financial conditions militate against an expensive, green reconfiguration of the industry. This creates a tendency towards ‘carbon lock-in’, meaning the stubborn inertia of carbon-intensive systems, which governments are seeking to pry apart through support for electric vehicle production (ibid; IEA, 2020).

Contradictions of renewable power

If economic stagnation acts as a drag on both energy efficiency gains and the decarbonization of industrial processes, then even greater investment in renewable power is required to meet the Paris targets. Yet this enlarged investment requirement is also obstructed by the same economic slowdown, characterized as it is by paltry rates of investment.

### Not Degrowth---AT: Kallis

#### Kallis is wrong – no epistemological reason to believe the transition would succeed, and overwhelming evidence of unintended consequences – we’re more likely to solve than they are, even if they’re right about everything else

Martin Weiss & Claudio Cattaneo 17. Weiss is at European Commission – Joint Research Centre, Directorate C – Energy, Transport and Climate, Sustainable Transport Unit; Cattaneo is at Autonomous University of Barcelona, Barcelona Institute of Regional and Metropolitan Studies. July 2017. “Degrowth – Taking Stock and Reviewing an Emerging Academic Paradigm.” Ecological Economics, vol.137, pp. 220-230. DOI: 10.1016/j.ecolecon.2017.01.014

With the methodological limitations sketched in Section 2, the outcome of our review suggests that the history, concept, and rationale for degrowth are well explained. Yet, the largely descriptive academic discourse lacks rigid hypotheses testing through modelling and empirical assessments. By addressing the research questions and hypotheses identified in Section 5, the academic degrowth discourse could make an important contribution to the debate around a sustainable post-growth development (see also Escobar, 2015). We expect that degrowth may only receive broader public support if the marginal benefits of the status quo become smaller than those of the next best degrowth scenario for large parts of the population. The degrowth discourse has qualitatively discussed the deficiencies of the status quo but spent little effort to quantify the costs of continued economic growth as well as the well-being benefits of degrowth. Moreover, growth policies may not necessarily be abandoned on a finite planet earth. Instead, such policies may allow making maximum use of available resources (be it through expanded resource extraction, technological innovation, or increased commodification of society) in the short term, while in parallel enabling the development of means to cope with environmental limits in the long term. Drought in California arguably forced residential water consumption to decrease in 2014 by some 30% (Reese, 2015) without causing major social disruptions. Such a decrease may not have been achievable by appealing to voluntary frugality nor may have water-saving policies obtained sufficient public support by pointing out unsustainable water consumption. The observed water savings might be temporary but show the capacity of humans to adapt in face of acute resource shortage. The case also points to the importance of technology as a catalyst for factor substitution in production and consumption in response to environmental constraints. To be successful, degrowth has to identify a concrete and inclusive development perspective (see Schwartzman, 2012) for the affluent and powerful elites and the marginalized poor. Direct benefits of degrowth might be experienced by consumers in areas where further growth has obviously become undesirable, such as in the health care industry as illustrated by Missoni (2015), in the food, nutrition and the agricultural sector, or in urban transportation. Degrowth could address psychological stress related to over consumption, long working hours, and the commodification of social relations and highlight the benefits of a simplified life style away from positional competition and towards more collaborative community development. Addressing life quality around resonant human interactions (Rosa, 2015) in face of increasing competition and individuation may be a viable angle to highlight the benefits of degrowth. Decreasing working time can mitigate environmental degradation (Knight et al., 2013; Fitzgerald et al., 2015) and provide a leverage point for virtually all other degrowth proposals. In fact, we would regard a decrease in working time as the single silver bullet through which degrowth can yield personal welfare gains, increase environmental sustainability, enhance democracy, and thus obtain the support of larger parts of the population. Yet, to be a fulfilling choice, reduced working time, and degrowth in more general, may hinge on a wider cultural recognition (see, e.g., Skidelsky and Skidelsky, 2012) that still appears to be hampered under the present societal conditions. Kallis (2013) argues that societies have the capacity to steer social processes towards degrowth, thereby opposing the view of Sorman and Giampietro (2013) who consider that societies are destined to grow, crash, and adapt. We see a larger and more differentiated space of development to which the degrowth discourse contributes visions for both social and economic adaptation and the mitigation of environmental impacts. In a resource-constraint world, degrowth may occur as a gradual and locally-specific transition (Buch-Hansen, 2014). We argue with Ott (2012) in favor of political prudence through addressing specific problems with specific policies and against the pursuit of grand new utopias that often come with unintended consequences.

### Not Degrowth---AT: Schmelzer

#### Schmelzer votes neg---transition is too disruptive to be politically feasible.

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The combination and interplay of interstitial strategies, implementing nonreformist reforms, and building counter-hegemony is our humble proposal as to how we might best conceptualize the transformation to a degrowth society. A common feature in these strategies is that proponents of degrowth are not waiting for a distant future ‘after the revolution’ but aiming to change things here and now. Another common feature is that the diversity of approaches is not seen as a problem but as enriching and complementary. 51 But the challenges are enormous, especially in view of the increasingly acute socio-ecological crises and the growing threat from authoritarian nationalist movements, which promise false solutions to the problems of the growth society. Not only is this transformation diametrically opposed to the interests of capitalist enterprises and the richest groups and individuals, as well as to fossil capital and the fascist movements defending it – since it aims to drastically limit or abolish the possibilities for exploitation and accumulation; it also contradicts the interests of national governments, which are fundamentally geared to and existentially dependent on strengthening competitiveness and economic growth. And, finally, not only is the monopoly over the legitimate use of force – held by growth-oriented states – an enormous challenge; potential upheavals in geopolitical relations also present a serious problem. If degrowth were implemented in a single country, it would likely lead to capital flight, capital strikes, geopolitical tensions, and possibly even armed conflicts.52

Ignoring these challenges and hurdles, fleeing from reality, is clearly not an option. It’s no use sticking our heads in the sand. Nor can we fall into the naïve idea that we just have to talk to everyone nicely to get them on board: we need intentional, large-scale organization and mobilization to achieve the changes we need. The alternative is intensifying global environmental and social crises and the increasingly brutal defence of the imperial mode of living – in short, a world of eco-apartheid.

Yet, what these proposals do not, and in many ways cannot, take into account is the unpredictable: the role of crisis in bringing about change. As we write, the coronavirus pandemic has halted world trade and caused stock markets to collapse, leading to a global recession. Though many epidemiologists did predict the high probability of another pandemic, it took many by surprise and changed everything. In the Global South, governments already heavily laden with debts, previously incurred from structural adjustment, buckled once more under another weight. In the United States, the government initially barely responded, leading to hundreds of thousands of avoidable deaths. Countries like Spain and Canada instituted welfare systems functioning similarly to basic income, nationalized health care facilities, placed moratoria on evictions and froze rents, or instructed companies to produce health equipment in line with state plans. And a historical antiracist uprising broke out across the world, sparked by one of the largest protests of US history against police brutality, structural racism, and the racist ‘politics of disposability’ revealed by the pandemic.53 Moments of crisis such as a pandemic are unpredictable events that fall upon us, junctures in the capitalist world-system that can lead to the rapid mobilization of social movements – and of repressive forces. Crises such as these can drastically affect our political projects and the horizons of what is possible by either expanding or curtailing them.

‘Degrowth by design or by disaster’ has become one of the main catchphrases to think through the role of crisis in bringing about a degrowth transition.54 It suggests that downscaling will happen whether we want it or not: it could be planned and largely peaceful, or unplanned and violent. But, by now, readers should recognize that wholesale collapse is explicitly not what is meant by degrowth. The wider issue, however, is that this phrase also implies a dichotomy between design and disaster, against which we want to push. Amid an accelerating ecological collapse and faced with the threat of ever greater economic crises, as over-accumulation spirals to ever higher levels, the likelihood of a social-ecological transformation without crisis is small. The relations between ‘by design’ and ‘by disaster’ are, however, complex: in some cases, disaster can be an opportunity for design; in other cases, an opportunity for deepening repression. A transition by design is unlikely; and yet, by relying on a crisis alone, it won’t happen.

In the degrowth literature, it is fair to say that the role of crisis is not well developed. Here we propose a more nuanced approach to the role of crisis in transformation, inviting our readers to think about it further. Let us begin by orienting ourselves once again according to Erik Olin Wright’s three transformation strategies: interstitial, symbiotic, and ruptural – which we discussed in terms of nowtopias, non-reformist reforms, and counterhegemony. Crisis, and its contradictory role in transformation, can also be conceptualized through this lens.

To begin with, interstitial strategies have a very important place in responding to crisis – and highlight the need to build up resilient communities. For example, when Hurricane Maria hit Puerto Rico in 2017, it resulted in billions in damages and the destruction of roughly 80 per cent of its agriculture. It was during this dark and frightening moment, when little aid was available, that democratically-run community centres such as Casa Pueblo in the city of Adjuntas provided solar-powered energy, food, and mutual aid to citizens. In any crisis, it is often local communities collaborating democratically based on altruism, resourcefulness, and generosity who are most effective in their response – relying on what Rebecca Solnit in A Paradise Built in Hell has analysed as proto-communist principles.55 It is in these tumultuous moments that nowtopias like Casa Pueblo become especially relevant: people are drawn to them, and they in turn help shape the imaginary of what a post-crisis world could look like. Though a small organization, they had an outsized impact on local politics. Following their success, organizations like Resilient Puerto Rico started building out a distributed network of solar power for community centres around the island. Two years later, the whole island rose in protest, kicking out the corrupt governor and, in part inspired by Casa Pueblo, which by then had become well known, began organizing local assemblies in every town and city. And there are hundreds of similarly empowering examples from other crises – from the decentralized, anarchist-inspired mutual aid efforts around the Common Ground collective after Hurricane Katrina in 2005 and Occupy Sandy in 2012 in the US, to the wave of solidarity clinics in Greece providing people with health care and medicine in reaction to EU austerity measures, and, most recently, the mutual aid networks that sprang up around the world in the context of COVID-19. By setting up these alternatives now, they will be in place to support and inspire people when they are shaken out of their daily routines in moments of tremendous change. In this way, the windows of opportunity resulting from the crises can be used as options for action, further expanding bottom-up movements, and awakening the desire for transformation.56

Second, crises can also be an opportunity to roll out or expand nonreformist reforms. Naomi Klein famously showed how elites used shocks – such as the fall of the USSR or Augusto Pinochet’s Washingtonbacked coup of Salvador Allende – to implement neoliberal reforms, eventually siphoning wealth towards the rich and driving greater inequality. 57 Conversely, however, the left can also take advantage of crises to respond effectively and accomplish far-reaching change. The pandemic served as an eye-opening case in this regard – as argued by Tim Jackson: ‘With an alacrity that was almost shocking, the coronavirus crisis revealed what capitalism has long denied: that it is possible for government to intervene in the health of society. Dramatically if necessary.’58 Notwithstanding later changes, initially governments and companies adopted policies that were quite radical, as we noted above. In the context of a mass movement pushing for change and sympathetic political leaders, such moments could have been opportunities to execute a Green New Deal platform at the national level.59

Moreover, the state has a central role during these crises, often acting as guarantor of financial institutions when capital investments see sudden and rapid fluctuations and devaluations. Certain events – a pandemic, the loss of confidence in large spheres of investments – can shift the global economy from overaccumulation of capital to a sudden devaluation of it. As Patrick Bond notes, while ‘uneven global development is on the degrowth horizon … capitalist crisis tendencies should be too’.60 Normally the brunt of these crises of devaluation are imposed on the poor through increasing their debts, while corporations, banks, and the rich are bailed out, thus creating the conditions for new forms of investment and a continuation of the boomand-bust cycle. Yet, nonreformist reforms could leverage crisis to the opposite effect: bailing out the poor, erasing Global South debt, letting purely financial assets devaluate, and making bailouts of companies and banks conditional on public ownership, democratic control, and strict criteria for social-ecological well-being.

This can be further illustrated with one example from the COVID-19 crisis. In the early days of the pandemic, the idea gained traction in the US that effectively addressing climate change would involve taking fossil fuels out of the market by nationalizing fuel industries and their oil, gas, and coal reserves – and that this crisis was a good opportunity to do so. A group of scholars in economics and energy studies argued in a 2020 white paper, ‘Out of Time: The Case for Nationalizing the Fossil Fuel Industry’, that this was the only way ‘to overcome many of the systemic hurdles that prevent meaningful action, allowing us to move towards decarbonization in a way that is planned, provides for workers, and supports communities’. In their convincing case, the authors refer to hundreds of historical examples in which the US government had nationalized key industries and critical resources during wars and financial crises. To achieve this, they argued no expropriations or compulsory acquistions were necessary – the easiest would be if the Federal Reserve simply bought majority shares of every fossil fuel company, whose value was at that time of crisis estimated to be no more than $700 billion (and thus much less than the corporate bailouts provided during the pandemic).61 This example shows how non-reformist reforms could potentially play critical roles in times of crisis. However, as this also makes clear, such an effective response to capitalist crises would need to go beyond traditional leftist or ecological Keynesian approaches by demanding a wholesale restructuring of finance and economy and by fundamentally shifting the balance of power between private capital and the democratic public – a response that certainly needs to be prepared beforehand and requires effective popular pressure.

Third, it is in moments of crisis that counter-hegemony can become especially powerful. Crises can shape a counter-hegemonic common sense, in that they are moments when the unfairness and irrationality of the economic system crystallizes in people’s mind – such as, when, during the coronavirus pandemic, many governments prioritized economic growth over people’s lives, resulting in a terrible calculus in which the elderly who do not contribute to the economy are considered disposable. Patrick Bond, in an article on the role of crisis for degrowth, points to two key ways that degrowth-oriented movements can organize in response to crises. First, an effective response to crisis involves building links with workers and communities in the Global South, as they are the most affected by the unequal imposition of debt following global economic meltdowns. Second, in the face of post-crisis devaluation of social reproduction (for example, cuts to medicine, housing, or increasing rates of energy costs), organized social movements may campaign for expansion of the requirements for survival, demanding access to basic goods and therefore expanding the desire for a care-based economy. 62 We would add that, more generally, organizational structures that build towards dual power can be activated and strengthened during moments of crisis as people turn to mutual aid organizations, alternative forms of democracy, and nowtopian experiments. What is imperative, however, is that these networks embed international solidarity in their organizing, as moments of crisis are precisely also moments when the losses of the rich tend to be socialized and shifted on to the poorest.

Yet crises are also charged with extreme risk. They can and often do strengthen the right and tend to reinforce the growth paradigm, capitalist hegemony and the logic of law and order that supports it.63 Today, political coordinates have shifted significantly with the rise of the New Right in the US, Europe, India, and Latin America. These populist movements see success by and large through promising to retain the status quo for the privileged middle class while breeding resentment among downwardly mobile working and middle classes against migrants or other ‘outsiders’ – taking advantage of declining rates of growth and migrant crises to further their agenda of maintaining a hierarchical status quo by any means necessary. This aggressive defence of the fossil fuel–dependent imperial mode of living has so far hardly been taken into account in the strategic discussion on degrowth and in the ecological left more broadly, even though this has a considerable influence on the windows of opportunity for communication and the implementation of degrowth.64

In times of crisis, the voter bloc of the nationalist right can expand rapidly, when many people favour stability and order over transition and the insecurity that comes with it. In times such as these, it is imperative that degrowth appears, not as destabilizing and inspiring fear, but as the necessary transformation that both expands people’s freedoms and gets to the root of the crisis itself. It is for this reason that a formation of a counterhegemonic common sense – one that is internationalist, antiracist, queerfeminist, and inclusive, and stands for global ecological justice – is one of our greatest tools in preventing a fascist resurgence today.

# Neg---Links to Generics

## Politics Link

### GOP Backlash Link---1NC

#### The GOP would backlash to the plan’s proposal.

Annie Lowrey 18, staff at the Atlantic, “A Promise So Big, Democrats Aren’t Sure How to Keep It,” 5/11/18, The Atlantic, https://www.theatlantic.com/ideas/archive/2018/05/the-democratic-party-wants-to-end-unemployment/560153/

This radical idea is called a jobs guarantee, and Senators Bernie Sanders of Vermont and Cory Booker of New Jersey have in the past few weeks come out in support of it. Kirsten Gillibrand of New York, another 2020 presidential aspirant, stands behind the idea too. Representative Ro Khanna, who represents much of Silicon Valley, has legislation providing a government jobs guarantee forthcoming in the House, he told The Atlantic. The most powerful think tanks on the left—including the wonkish Center on Budget and Policy Priorities, the politically attuned Center for American Progress, and the progressive Levy Economics Institute of Bard College—have published jobs-guarantee policies or are planning to do so. A blue-sky policy idea has become an animating policy mandate in a matter of months.

The impulse is a radical one, with policymakers spurred to action by the incremental progress of the Obama years, the polarization and obstinacy of the right, the shock election of Donald Trump, the leftward ideological march of younger voters, and the decades of economic stagnation afflicting lower-income voters. “We have been a society, for generations, that has had this fundamental belief that if you’re willing to work hard, if you’re willing to put in the grit and the struggle, you should be able to thrive and make it in America,” Booker told me. “When you have the kind of societal abundance that we have, if you’re willing to work, you should have a shot at economic stability and the American dream. We do not believe we should leave people behind to the ravages of unemployment and poverty.”

But guaranteeing every American a job means guaranteeing every American a job. It means countering the job losses caused by recessions and automation and globalization one-to-one. It means finding work for people in every town in half a continent. It means accommodating the homeless, the violent, the drug addicted, and the illiterate in the workforce. It means expanding the Department of Labor to become something like the size of the Department of Defense, and yet bigger during a downturn. It is a trillion-dollar logistical puzzle, wrapped in a politically fraught stimulus effort, inside an experimental economic enigma. And none of these proposals quite know how to solve it.

The idea of the government providing a job for unemployed citizens is not a new one—indeed, it is a very old one, a way for governments both to support and discipline the poor. England first offered jobs to the unemployed half a millennium ago, during the reign of Elizabeth I, as feudalism was giving way to mercantilism and thousands of serfs found themselves impoverished and jobless. Workhouses for the poor were established in the colonies, and thus predate the United States itself. Today, the Indian government operates a sprawling program that promises public jobs for the poor in rural areas, and there are numerous “workfare” and transitional jobs initiatives that operate in other middle-income and high-income countries, including in the United States. (Noncapitalist economies, of course, have promised to provide universal public employment, with varying degrees of success.)

Since the advent of Keynesian economics, countries have also had the government provide jobs to unemployed citizens as a form of stimulus, with the United States turning to both subsidized private-job programs and expansions of the public-sector workforce during downturns. The Works Progress Administration, created during the depths of the Great Depression, put 8.5 million Americans to work, erecting more than 600,000 miles of new roads, building 100,000 bridges and viaducts, and constructing 35,000 buildings, along with a number of murals, zoos, tennis courts, theaters, dormitories, and ski jumps. The Nixon-era Comprehensive Employment and Training Act provided jobs to the unemployed during the stagflationary years of the 1970s (though local governments ended up siphoning funds to cover their payrolls). And during the Great Recession, a little-known but wildly effective initiative called the Temporary Assistance for Needy Families Emergency Fund, or TANF-EF, gave money to the states to subsidize hundreds of thousands of positions, and fast, while the government also expanded infrastructure investment to soak up laid-off construction workers.

Nor is the idea that the American government should guarantee jobs for all its citizens a new one, with historians tracing its intellectual lineage back more than a century. In the 1930s, the populist politician Huey Long argued for the creation of a “Share Our Wealth Society,” to redress yawning inequality of the Gilded Age and to revitalize the Depression-era economy. “You get everybody employed,” he said in a radio address. “To do all of this, our taxation is going [to] take the billion-dollar fortunes and strip them down to frying size.” George McGovern, Martin Luther King Jr., and Franklin Delano Roosevelt also called for a jobs guarantee, and thus for the end of unemployment. “We have come to a clear realization of the fact that true individual freedom cannot exist without economic security and independence,” FDR said in a 1944 address calling for a second Bill of Rights, including “the right to a useful and remunerative job.” Members of Congress even tried to push through a legislative jobs guarantee as part of the Carter-era Humphrey-Hawkins Act, though the effort got watered down.

Animated by concern over many of the same social ills that animated Roosevelt, King, and Long—income inequality, racial inequity, the pain of recessions, and persistent poverty—today’s job-guarantee proposals would provide the unemployed with either a subsidized, private-sector job or a public-sector job. Booker has supported the idea of starting with pilot projects; Sanders focuses on public works; Khanna’s legislation goes for a subsidized-employment program; the Levy Institute and a proposal published by the Center on Budget and Policy Priorities suggest direct, on-demand, public employment at a good wage with good benefits. Still, in all the proposals, the general idea is that workers would be able to walk into a local employment office unemployed and walk out employed.

The implications are mind-bending. Unemployment and its miserable sequelae would be consigned to the past. So too would recessions, with the government creating a job for every worker squeezed out of the private sector during a downturn. So too would much of the country’s poverty, including its abhorrent deep poverty. “The two great failures of our economy are the failure to provide full employment and the arbitrary and inequitable distribution of income,” said Stephanie Kelton of Stony Brook University, the former chief economist for Sanders’s budget committee and a co-author of one of the new guaranteed-jobs proposals. “No capitalist economy has solved this problem of buffering employment over the business cycle. That’s what this is designed to do.” She estimated that a guarantee would not only provide millions of public-sector jobs, but would spur the creation of 4 million private-sector jobs, all while boosting GDP growth.

The biggest benefits, its proponents argue, would rebound to society’s poorest and most marginalized—among them individuals with a criminal record, mental-health problems, disabilities, and literacy challenges, all of which are powerful barriers to getting and keeping a job. Beyond that, the program might be a powerful tool to correct racial inequalities. The unemployment rate for black workers currently sits at 6.9 percent, versus 3.6 percent for white workers. Getting a college or a graduate degree does nothing to level these numbers out. That helps to foster a racial earnings gap and to fuel the pernicious, generation-spanning racial wealth gap, with black families with an employed head of household poorer, on average, than white families with a jobless one. A jobs guarantee would drive down black workers’ rates of unemployment, both in absolute terms and relative to white workers, Darrick Hamilton, who co-authored the CBPP proposal, told me.

Depending on how it were structured, a jobs guarantee also might act as a powerful boon to women, due to their prevalence in the poverty-wage workforce and their burden of uncompensated care work. Several proposals suggest providing a jobs guarantee to hire child-care and elder-care workers, something that would both keep the parents of young children in the labor market and ensure that caregivers got a living wage. “There are not nearly enough home care workers to aid the aged and disabled. Many working families with children under the age of five need access to affordable child care. Schools need teachers’ aides, and cities need EMTs,” the Center for American Progress jobs-guarantee outline argues. “There is no shortage of people who could do this work. What has been missing is policy that can mobilize people.”

Workers in high-unemployment regions might find their hometowns revitalized, with the government pouring vastly more money into places like Salinas, California, and Ocean City, New Jersey, in both of which the unemployment rate sits above 10 percent. Middle-class households might benefit alongside lower-income households, with the private sector competing more fiercely and directly to win workers over. Additionally, Khanna told me, a jobs guarantee might help soften the threat of automation, and the fear that another recession might lead to robots taking all of our jobs.

For all those reasons, in all the proposals, the idea is to go big. “I think fundamentally we’re trying to rethink the social contract in the United States,” said Neera Tanden, the president of CAP. “Our social contract is basically constructed for the New Deal era. The New Deal is really a function of the transformation of the economy from the agricultural age to the industrial age. And the economy has fundamentally transformed again, in the age of information and the age of globalization. But we have not changed the social contract fundamentally, yet.”

It also reflects a sense that Democrats need to be radical, a function of the political climate as much as it is of the economic climate. “The loop we’ve been in, which has been a trap, is that we propose ideas that can get bipartisan muster, and then we get argued to nil,” Tanden said. “I’m a deep believer that progressives need to offer their true ideas of what we need to do in the country on a whole list of issues and then work to build a politics that can make that happen.”

Still, none of these early Democratic efforts come close to figuring out how to provide a job to every American—instead hand-waving about where the jobs would come from, instructing states and cities to do the technocratic heavy lifting, and gesturing to the economic benefits. “It seems to me that these proposals as a general point are enthusiastic about how this might work,” said LaDonna Pavetti of the Center on Budget and Policy Priorities. “But are perhaps underestimating how much work and how many services would have to scale up to provide those kinds of jobs.”

Consider, for instance, the simple question of what kind of jobs should be on offer. Kelton and Hamilton, along with their co-authors, have pushed for direct public employment, rather than providing wage-subsidized private jobs. “You don’t want this to be workfare,” Hamilton told me. “You want to create a true alternative.” His proposal suggests that such jobs could involve “the repair, maintenance, and expansion of the nation’s infrastructure, housing stock, and public buildings; energy-efficiency upgrades to public and private buildings; assistance with ecological restoration and services to reduce the country’s carbon footprint; engagement in community-development projects; provision of high-quality preschool and after-school services; provision of teachers’ aids; provision of high-quality elder care and companionship; rejuvenation of the nation’s defunded postal service; support for the arts; and other activities that shall support the public good.”

But does the supply of work the country needs done match the supply of workers available to do it? Those are mainly skilled, middle-class jobs—often ones that require months or even years of specialized training. Constructing a building means hiring crane operators and electricians. Adding workers to preschools means certifying individuals in early-childhood education. Care jobs are a permanent need, and would not scale up easily during a recession. Construction jobs might not be well-suited for an out-of-work population struggling with significant barriers to employment, such as addiction and mental-health issues.

RecycleForce is instructive here. “We put people in a real job, although it’s more of a theater of a job,” Gregg Keesling, the company’s president, told me. Employees, for instance, often violate the terms of their parole and get put back in jail. “The biggest barrier to normal employment and the biggest reason for going back in is the criminal-justice system itself,” Keesling told me. “We have a young man who works for a big metal-coating company, and they transferred him out to the airport to do the job. His ankle bracelet lost signal, so they went out and arrested him. He’s now in jail.”

As for Thompson, he told me that he had made some bad choices and found himself hanging out with the wrong people again. One shot him in the arm, causing him to miss work for a few weeks. He had recently gotten back, and had only been out of a sling for a day, when we spoke. “We’ve referred to RecycleForce as a safe haven,” Keith Murray, a 66-year-old who works alongside Thompson, told me. “We deal with people that have never had jobs, have never worked before, who come from dysfunctional families. We understand that we’re going to have some failures, but we don’t concentrate on the failures.”

Given the challenges that individuals struggling to find work in an economy near full employment face, existing workfare programs have often involved menial labor, like picking up trash, rather than more middle-class pursuits. But that makes those jobs far less appealing to program participants, and undercuts the argument that such jobs would provide a pathway to gainful unemployment. Indeed, in surveys of government jobs programs, direct public employment tends to perform “relatively poorly,” researchers have found. “This pattern suggests that private employers place little value on the experiences gained in a public-sector program—perhaps because many of these programs have little or no skill-building component.”

Subsidized-jobs programs—where the government pays part or all of a worker’s wages—have their own issues too. Among the biggest is the mammoth incentive for businesses to ditch their full-time workers and scoop up subsidized ones. If that happened, the government could end up encouraging and indeed financing a sprawling, sub-minimum-wage labor force. “If you really want to eliminate involuntary unemployment, you have to create an economics language of perfectly elastic demand for labor,” Kelton said. “That doesn’t mean incentivizing and cajoling and tickling the bellies of the private sector.” But Indi Dutta-Gupta of the Georgetown Law Center on Poverty and Inequality, who helped craft Khanna’s plan, argues that a jobs guarantee should subsidize wages for private businesses. “Subsidized jobs are intended precisely to match demand with supply—to remove barriers on the supply side and inject demand for employers,” he said.

There are other issues. A jobs guarantee would have to manage huge swings in the size and needs of its client population. “When there’s 10 percent unemployment, folks who are out there looking for jobs, some of them have very steady work histories and they’re pretty easy to place,” Dan Bloom, the director of the MDRC, which researches transitional employment programs, told me. “There was absolutely an employer that would love to have them if they could get their wage subsidies. That’s a different context than we have now, where the folks that are out of the labor market are probably going to be facing some serious issues.”

For some Democratic policy wonks, the trade-offs in both economic and political capital seem the most salient. What do you give up by implementing a jobs guarantee? What comes first: a public option for health insurance, or a major jobs plan, or an expansion of the Earned Income Tax Credit, or a universal child allowance, or a major educational debt-relief plan, or postal banking—all of which are ideas being pushed by Democratic presidential aspirants right now?

“How much in life do you spend money on the last mile?” Gene Sperling, who was the director of the National Economic Council under Obama, asked me. “There are big, long-term unemployment problems, right? That’s complicated. Those are people who need a lot of help. They need a lot of support. Is that really the issue, or is the issue that the working poor are not making enough money to support their families? If you’re going to spend a trillion dollars on something huge …There’s an element here of people not thinking about what they’re actually trying to do.”

In a technocratic sense, perhaps. But the technocratic problems that a jobs guarantee poses are not impossible to solve.

There are good models. RecycleForce, for instance, cuts the recidivism rate of recently incarcerated individuals to 26 percent, versus a national rate of 64 percent, Keesling told me. And it saves the taxpayer $1.20 for every dollar invested. Surveys show that similar jobs programs have raised both earnings and employment rates for their participants, and also “decreased family public benefit receipt, raised school outcomes among the children of workers, boosted workers’ school completion, lowered criminal-justice system involvement among both workers and their children, improved psychological well-being, and reduced longer-term poverty,” a survey by the Georgetown Law Center on Poverty and Inequality found. “There may be additional positive effects, such as increased child-support payments and improved health.”

Scaling up transitional jobs initiatives would be a good start, then. “There’s nothing resembling an entitlement that supports a person coming home from prison right now,” Sam Schaeffer, the executive director of the Center for Employment Opportunities, a New York-based nonprofit that provides jobs and training to the formerly incarcerated in 20 cities, told me. “To really tackle this challenge, there should be some unifying mechanism, with a mix of workforce programs, anti-poverty programs, nutrition assistance, housing, and more. We’ll pay $82 billion a year to incarcerate people. We don’t make anything like a similar investment on reentry.”

There are also models stemming from TANF-EF. JobsNOW! in San Francisco offers a tiered program to help workers with different levels of readiness for a paid job. One tier pays participants while they enroll in job-readiness or vocational training, or a high-school diploma program. It also pays participants to do relatively low-skill work at a nonprofit. Finally, there is a wage-subsidy program, aimed at individuals with work experience. On top of that, the program provides case management and wraparound services, helping ensure that participants have Medicaid and food stamps. All in all, it has increased its 20,000 participants’ earnings by an average of 55 percent, and three in four no longer need cash assistance two-and-a-half years after exiting the program.

The evidence for what works is out there, and the need especially great in certain communities and with certain individuals. Starting with pilots and scaling them up, as Booker wants to do, makes sense. So does Khanna’s model of directing state and local governments to figure out what works for them, as TANF-EF did. So does Sanders’s idea of having “hundreds” of public-works initiatives.

For all the blue-sky thinking and talk of a national, public-jobs guarantee, Democratic policymakers do seem to be taking the idea seriously, but not literally, to borrow a phrase. The idea is to indicate to the country that they want to tackle the biggest challenges with the biggest solutions—not to figure out every detail, pay for every dollar, appeal to every voter, and pass a policy bar their colleagues on the other side of the aisle have shown no interest in.

That gives Democrats room to experiment. “This is not a panacea to solve the jobs problem. It has to be attacked in multiple ways,” Khanna told me. “I would argue that this is a first, serious proposal that by my own admission I would say is not intended to be perfect.” It avoids putting them in the position of negotiating themselves down. “I see it as really opening the Overton Window in a way that is a quite useful for this debate,” Bernstein said. “I’m not in the business of negotiating with myself at this point. Let’s let all the good ideas blossom.” It vaults over the need to figure out the most difficult parts of the legislation, like how much or how to pay for such a proposal. “I’m not gonna presume how we pay for it,” Tanden said. “I do think the Republican tax plan indicates how little Republicans care about deficits when it comes to taxes. I’m not saying that we won’t care about this. But obviously it makes that an easier conversation.”

It also acknowledges that Republicans are unlikely to get on board with big Democratic ideas, freeing liberals to think bigger. “We live in the era of tribalism,” Tanden told me. “It’s hard to think through a proposal if Republicans feel like doing any deal with Democrats is noxious. Ipso facto, when a Democrat proposes something, they cannot support it because it’s the Democrats have creating it. That does not allow for compromise.”

## States CP

### States CP---1NC

#### States solve---they can become monetary sovereigns for the purpose of the CP.

Mathew Forstater 18, professor in Economics and the Research Director of the Binzagr Institute for Sustainable Prosperity, UMKC, “Complementary Currencies in the Solidarity Economy: The Local Job Guarantee,” Full Employment and Social Justice, edited by Michael J. Murray and Mathew Forstater, Springer International Publishing, 2018, pp. 159–167 DOI.org (Crossref), doi:10.1007/978-3-319-66376-0\_7

According to neo-chartalism, a non-convertible floating currency is a monopoly of the issuer. The issuer has not only the power to impose debt obligations, but to designate what is acceptable to settle those obligations, what it will accept at its pay offices. In this way, the issuer can create a demand for otherwise worthless bits of paper, leading to general acceptability. The monopoly issuer can use its own monopoly money to purchase goods and services, including labor-power. These and related powers constitute a menu of instruments that may be used to conduct policy based on the principles of functional finance (Forstater 1999). Under such a system, the issuer’s budget may be freely used to promote job creation and other socio-economic goals.

Such a system crucially depends on a one-to-one correspondence between money and the issuer, and only with such a strict correspondence does the issuer’s debt become truly riskless, enabling the issuer to buy anything for sale—and settle any obligation—denominated in the unit of account (Goodhart 1998). When communities forfeit their monetary sovereignty and the strict correspondence is severed, as in the current structure of the European EMU, they do face financial constraints, and currency risk is replaced by default risk.

In 2012, I visited Italy to speak about the European crisis. The options for real change considered by the panelists included: (1) exit from the EMU by Italy or other individual member nations; (2) radical reform of the structure of the monetary union (or the use of “emergency” measures hidden in the fine print), for example, seriously increasing the deficit-GDP and debt-GDP ratios, zero-interest or low interest (or negative nominal interest!) loans to individual nations; (3) an end to the monetary union and a return to national currencies; and (4) the creation of a fiscal authority at the Euro level to work in concert with the ECB, that is, a “United States of Europe” (Kregel 1999). During the discussion period, a young audience member asked, “So, short of waiting for the politicians in our countries or the bureaucrats in the EU to implement changes they lack the will and/or the power to undertake, is there nothing we can do to help the unemployed and their families in our cities and localities?”

While a second-best solution, because they will still be operating within the constraints of the monetary union, we proposed communities consider issuing a form of complementary currency (CC) quite consistent with neo-chartalist principles, and that a local job guarantee (JG) program be implemented to employ the unemployed in community service jobs. In fact, the general idea of alternative currencies is not one that is new in Europe. In addition, the proposal is one that could be applied in other contexts where a full-blown national JG is not possible, either due to the constraints of some type of fixed exchange rate (whether a peg to another country’s currency or a monetary union) or because of political obstacles.

In the USA, for example, proposals for a job guarantee have been put forward as national policies due to the flexibility the federal government has in paying for the program. This flexibility stems from the ability of the Treasury and the Central Bank to work in cooperation to implement fiscal and monetary policies. There are many obstacles, however, to government policies at the federal level, including political, administrative, legislative, and ideological. An alternative route to job creation at the local level would be to use a complementary currency to pay for community service employment. In this way, cities, counties, or states that are currency users in terms of dollars can become currency issuers in terms of the complementary currency. In addition, this form of local financing dovetails nicely with the focus of most job guarantee proposals on local administration and management of JG activities by local governments, non-profits, and NGOs. There are numerous other potential benefits of the local solution for individuals, families, neighborhoods, communities, and regions (Forstater 2013). It is possible that the benefits of a well-managed local currency may mean its implementation is desirable even in communities within a nation operating a neo-chartalist monetary system and managing its budgets according to the principles of functional finance (including a job guarantee), and during prosperous times and not only in the event of a crisis.

### States CP---2NC

#### Implementing a local

Mathew Forstater 18, professor in Economics and the Research Director of the Binzagr Institute for Sustainable Prosperity, UMKC, “Complementary Currencies in the Solidarity Economy: The Local Job Guarantee,” Full Employment and Social Justice, edited by Michael J. Murray and Mathew Forstater, Springer International Publishing, 2018, pp. 159–167 DOI.org (Crossref), doi:10.1007/978-3-319-66376-0\_7

7.4 Enhancing Community: Other Benefits of Localism

The local job guarantee would have all the regular potential benefits of employment and the national job guarantee, such as increased production of community services, developing skills, utilizing creativity, and countering the social costs of unemployment. The local aspect of the program has additional potential benefits, however, such as those often noted in the local currency literature and other considerations of localism.

The program promotes increased interaction with one’s neighbors, and in this and other ways can strengthen community ties. The program therefore promotes mutual aid and reciprocity. Family and neighborhood empowerment follows from a program based on cooperation and local development. Numerous environmental benefits are also possible.

Previously, in addition to arguing that the JG may serve as a vehicle for humanistic social policies, such as a living wage, health care or child care benefits, and a shorter work week, I have suggested that the program might be used to help redefine what constitutes valuable work and also provide spaces for experimenting with alternative, non-capitalist social organization (Forstater 2013). It is possible the JG, and especially the local JG, may be an area for positive collaboration between the public sector and the solidarity economy (sometimes called the “social and solidarity economy,” or SSE) (Utting 2015).

Several concepts related to the solidarity economy and that have been little examined in economics are temporary autonomous zones (TAZ), prefigurative behaviors, and heterotopias. A heterotopia also refers to alternative or counter-hegemonic spaces in the present, not some future dream world that will only arrive after capitalism is completely ended (Watson and Gibson 1995). Similarly, many use temporary autonomous zones (TAZ) as creative community alternatives (Graeber 2007). Prefigurative politics (or behaviors or institutions) refer to the principle of behaving now in ways consistent with the future society we want to create, not waiting until that time arrives, and behaving in anti-social ways now (Milstein 2010). In all these cases, the point is that we should not and cannot wait for the arrival of the imagined future to begin, in fact the alternative already exists, and we must nurture, learn from, and improve upon these. There is much work to be done; some of it might begin in a local job guarantee program that results from a partnership of local or regional governments and the solidarity economy.

### States CP---AT: Preemption

#### It doesn’t have to be structured as money as long as it has money’s core qualities.

Mathew Forstater 18, professor in Economics and the Research Director of the Binzagr Institute for Sustainable Prosperity, UMKC, “Complementary Currencies in the Solidarity Economy: The Local Job Guarantee,” Full Employment and Social Justice, edited by Michael J. Murray and Mathew Forstater, Springer International Publishing, 2018, pp. 159–167 DOI.org (Crossref), doi:10.1007/978-3-319-66376-0\_7

7.1 Money, Employment, and Complementary Currencies

When there is unemployment, jobs and money, not resources and goods, are scarce. In a full-employment economy, there is a sense in which resources are scarce. Economizing is important, as resources can only be allocated to some use if they are removed from another productive activity. In an economic system with unemployment, however, resources are not scarce, as production may be increased by employing the unemployed resources. But there are other kinds of scarcity in the economy suffering from unemployment: “What is scarce is money. The lack of money to spend on the goods is what keeps the unemployed resources from producing more goods” (Lerner 1951, p. 147).

Historically, many complementary currencies appeared during times of economic crisis, when money was not adequately available. If the amount of national currency was not sufficient to meet the community’s needs, they would simply create their own. During the Great Depression, there were dozens, if not hundreds, of cases of local currency, just in the USA (Gatch 2011). In Europe as well, numerous complementary currencies appeared during the Great Depression, and many exist there today.

The contemporary literature on complementary currencies acknowledges and accepts the central insights of chartalism and functional finance. Bernard Lietaer and Jacqui Dunne, in Rethinking Money (2013), write:

[A] sovereign government does not really “need” to raise taxes to pay for its expenses. Once this is understood, it becomes clear that neither taxes nor government bonds “finance” government spending. Instead, taxes are required to give value to money. (Lietaer and Dunne 2013, p. 27)

In People Money: The Promise of Regional Currencies (2012), the authors state that “[i]f the authorities want to encourage regional currencies, so that their full potential can be realised, the most effective way of doing this would be to accept them in payment of specific taxes” (Kennedy et al. 2012, p. 68).

Lietaer and his co-authors, in Money and Sustainability: The Missing Link (2012, pp. 133–138), cite authors such as Wray (1998), Mosler (1994), and others in support of what they call the “Fiat Currency Paradigm,” which they contrast with the “Official Paradigm” (i.e., the orthodox view). The core characteristic of the fiat currency paradigm, they argue, is that, “the systemic role of taxes is to give value to a currency, which, in the case of a fiat currency, would otherwise have no intrinsic value whatsoever” (Lietaer et al. 2012, p. 136).

Historical analyses of what has been called “tax anticipation scrip” (essentially what neo-chartalists have termed “tax-driven money”) in the USA in the 1930s now include references to chartalism (Gatch 2011). Articles analyzing local currencies in journals such as the International Journal of Community Currencies and the Journal of Cleaner Production likewise reference the modern money literature (see, e.g., Dittmer 2013). Modern money theory has until recently not reciprocated this engagement of the complementary currency literature with neo-chartalism, functional finance, and the JG. This does seem to be changing a bit, however, and there have also been some notable exceptions, such as Peacock (2006, 2013). One of the most important links between chartalism and complementary currencies has been the Buckaroo program at the University of Missouri—Kansas City (UMKC).

7.2 The UMKC Buckaroo Program: A Neo-Chartalist Complementary Currency

When the Center for Full Employment and Price Stability (C-FEPS) moved to the Economics Department at UMKC in the fall of 1999, the department commenced a service-learning program that would encourage students to do community service while learning about modern monetary systems and government budgets. Rather than directly requiring students to do community service, the department created its own currency, called the “Buckaroo.” The name of the currency is a play on the words “kangaroo” (the UMKC university mascot), “buck” (a common slang term for dollar), and—being located in Kansas City—the word for cowboy derived from the Spanish, vaquero (“Buckaroo”).

On the face of the Buckaroo is the inscription: “this note represents one hour of community service by a UMKC student,” and the note is denominated as “One ROO Hour.” The note also has a picture of Thorstein Veblen, the Institutionalist economist who held a position for a time at the University of Missouri, and whose work is closely studied by students at UMKC.

Instead of just requiring students to do service, professors include as part of the course requirements that students pay a tax of, for example, four Buckaroos per week for the semester. Approved community service providers (state and local government offices, public schools, NGOs, and not-for-profit agencies) submit requests to the UMKC Economics Department “Treasury” for student hours and are awarded “special drawing rights” (SDRs) as long as basic health and safety and liability standards are met. Service providers pay students one Buckaroo per hour, which is equivalent to spending by the Treasury. Students pay their tax with the Buckaroo notes they earn performing community service, and the requirement is met when their tax liability is met.

There is no limit to how many Buckaroos a student can earn. Some students will perform more hours of service than that needed to satisfy their tax liability. Buckaroos are freely transferable, so they may exchange for goods and services or other currencies.

Buckaroos are a floating exchange rate currency, in other words UMKC does not peg the exchange rate between buckaroos and dollars, for example. Buckaroos are also non-convertible, meaning UMKC doesn’t promise to convert it to anything, such as gold. The Buckaroo is a case of public monopoly, since UMKC is the sole supplier and it is against the rules to counterfeit Buckaroos. The Buckaroo is a sovereign currency, issued by a monopoly supplier who imposes a tax liability in its otherwise worthless currency. UMKC only promises it will accept Buckaroos in payment of taxes. The dollar is also a sovereign, non-convertible, floating currency without intrinsic value and operated as a public monopoly. The only promise the US Treasury makes is that it will accept dollars in payment of taxes.

UMKC always runs a Buckaroo deficit, because students always earn more than their tax liability (they lose some, keep some as souvenirs, etc.). UMKC’s Buckaroo fiscal deficit is exactly equal to the Buckaroos saved by the students. The value of the Buckaroo is a function of what the students have to do to earn a Buckaroo from UMKC, and is unaffected by the size of the deficit or the amount of Buckaroo spending by the department. UMKC Buckaroo spending, however, does not depend on collecting taxes. Certainly, UMKC does not need to borrow Buckaroos in order to spend.

A UMKC graduate, Fadhel Kaboub, earned his PhD and left to become a professor at Denison University, where he started a similar program there called “Denison Volunteer Dollars.” If UMKC decided it would give up its currency, and join a monetary union with Denison, then UMKC could not pay students unless it collected taxes first, or borrowed DVDs in private markets. UMKC would no longer be a monetary sovereign. It would no longer be a money monopolist. It could no longer continue to run fiscal deficits to create full employment and satisfy the desire of students to save. Denison would tell UMKC it better get its fiscal house in order, and so force UMKC to accept an austerity program.

When Greece, Spain, Italy, and other member nations joined the Euro, it put itself in exactly the same position as UMKC, if UMKC gave up the Buckaroo and joined Denison in a monetary union (or pegged the Buckaroo to the DVD). Before adopting the Euro, the member nations were also monetary sovereigns, and their currencies were also a non-convertible floating currencies backed by the tax system. But when they adopted the Euro, they voluntarily gave up their monetary sovereignty. They are no longer money monopolists. They are no longer a currency issuers, but now, like households, they are currency users.

Short of UMKC voluntarily giving up its monetary sovereignty, however, the similarities between the Buckaroo and other non-convertible, floating currencies such as the dollar:

Governments issue money to buy what they need; they tax to generate a demand for that money; and then they accept the money in payment of the tax. If a deficit results, that simply indicates that the population wishes to hoard some of the money. The deficit is of no consequence to the government; it merely allows the population to save in the form of government money. If the government wants to, it can let the population trade the money for interest-earning government bonds, but the government never needs to borrow its own money from the public. Taxes and bonds, therefore, have nothing to do with financing a government’s spending. (Wray 2000, pp. 61–62)

7.3 The Local Job Guarantee

Complementary currencies (CCs), both historically and currently, come in a variety of forms. Some have a fixed exchange rate with the national currency, while others have a rate that is not. Some are based primarily on commitment of the community members to the locality, while others are “tax-driven.” Some are issued by NGOs or other community organization, while others are issued by the local government. To create jobs, localities run what amounts to a local Buckaroo program, where the CC is a non-convertible, floating rate currency issued by the local government and is tax driven.

The local government would impose a tax payable only in the CC, say four per household. We propose the tax be imposed on households rather than individuals so as not to penalize larger families. For the program to operate, the CC needn’t be accepted in payment of any other tax. The locality will then announce that it is offering a community service job to anyone ready and willing to work, paying one CC per hour. For localities suffering under the economic crisis plaguing the Eurozone, four hours per week of community service is not too much to ask households to contribute to rebuild their economies.

Some households will work more than four hours per week, some will work less. Those who work, say, 40 hours per week, will pay their tax and have 36 CCs left over. Those who are too busy to work in the program (because they are working full-time, for example) will need to acquire CCs from those who have extra. In this way, the CC will circulate in the local economy.

Like the Buckaroo and the US dollar, and unlike the Euro, the CC would be a non-convertible, floating currency. Like UMKC and the USA, the local community will be a monetary sovereign (in terms of CC). Depending on the regional, national, and local laws, the CC may be called something other than “money,” but since there are currently hundreds of alternative currencies operating world-wide, there is nothing preventing localities from pursuing full employment in this way (though the legal status may change in different regions).

## Cap K

### Cap K---Degrowth Link

#### Degrowth ideology misdiagnoses the root of social ills---trades off with socializing political and economic power to mobilize anti-capitalist resistance---turns case

Güney Işikara 20, Clinical Assistant Professor in Liberal Studies at New York University. "Is Degrowth an Alternative to Capitalism?," Developing Economics, https://developingeconomics.org/2020/01/05/is-degrowth-an-alternative-to-capitalism/

We have to be careful when setting the principles of the problem: capitalism is a mode of production that is primarily driven not by growth, but competition for profit where individual capitals are compelled to cut costs and increase scale. Growth is an outcome, not the motive of this process. And it has nothing to do with morals or personal intentions of capitalists who direct resources so as to make the highest possible profits and stay competitive.

When Kallis writes that “growth is a particular need of capitalism – a system that requires a compounding of profits” (p.36), he seems to be well aware of the systemic nature of this problem. Yet he keeps diverting to culture as the primary realm of struggle. In fact, the degrowth literature at large swings like a pendulum between these two takes: at times it focuses on structural limits pertaining to capitalism (that in fact make degrowth impossible), and at other times, it retreats to a moral critique.

The distinction between boundary (or, limit – Grenze) and barrier (Schranke) found in Marx’s Grundrisse and Capital is illuminating in this context. In the process of its expansion, capital turns every boundary into a barrier, an obstacle to be surmounted. This has two corollaries. First, capitalist growth cannot be questioned without challenging capitalism itself. Steady-state or degrowing capitalism is an oxymoron. Second, degrowth is not a substitute for capitalism, but rather a framework that aims to overturn only one constitutive element of the system.

The logical implication of advocating for an economic system that dispenses with the profit motive and accumulation, and puts instead well-being and use values to the center is to challenge the capitalist market economy. Only under social ownership of the means of production can we extend democracy to the realm where resources are allocated and limits are defined, what Kallis perceives as ‘real democracy’. Yet the degrowth literature at large becomes timid before the task of confronting capitalism as a mode of production, instead it continuously problematizes its symptoms.

The final chapter of Limits discusses the limits of the book’s approach. Here, Kallis notes that self-limitation cannot be conceptualized as a narrow project of individual or small-group change – it must be a universal political ambition. As such, it requires the involvement of “the working class and all those who live within limits that are not of their own choosing” (p.102).

This is a crucial point since the question of the subject haunts one’s mind while reading the book. Who is to be addressed? Who could challenge the relentless expansion of capital and thereby the capitalist system in its totality? Workers and capitalists have different perceptions of their selves, have different tools and powers at their disposal, and employ substantially different capacities when it comes to defining limits. And, above all, they have different interests!

Recognizing this fissure means to admit the contentious nature of the matter, and undermines the idea of the limitation of a universal self. If we take carbon emissions as an example, it is absurd to talk about the capacity for and necessity of self-limitation for a considerable portion of the global population who barely consume and emit anything. From this viewpoint, it is not a matter of collective self-limitation, but primarily the dethroning and limitation of those with political and economic power. Hence, an undifferentiated, abstract ‘we’ cannot assume the role of the subject of this change, but the exploited and oppressed. A radical change in the human-environment relationship is not likely to occur without a concurrent change in the human-human relationship.

A final word on degrowth itself: I totally agree that questioning capitalist growth is vital today to expose its destructive character as well as the fact that it comes at the expense of working people’s living standards. Moreover, a planned and coordinated degrowth of energy consumption (and output) in advanced countries in the short-to-medium-term is necessary at least to avoid runaway climate change. Yet, this is not to say that degrowth should be applied to all spheres of the economy as well as all social classes even in advanced countries. An increase in the living standards of the poor and working classes through expanded provision and decommodification of essential goods and services is the best way for political mobilization to beat back the expansion of capital in the immediate short-run.

We need not lock ourselves into the false dichotomy of ‘growth vs. degrowth’ where subjectivities, and the social and material content are barely perceptible. Once degrowth is institutionalized, it can easily become as socially blind as capitalist growth. Kallis himself seems to sense this when he, inspired by Le Guin’s The Dispossessed, mentions the risk associated with permanently renewing an initial commitment (p.112).

Hence, what is at stake is not replacing the straitjacket of growth (of capital) with that of degrowth, but abolishing the social relation of capital, turning the issues of “growth/degrowth of what?”, “at what cost?”, “under which circumstances?” into political questions. Avoiding ecological collapse is more closely linked to the emancipation of the working classes than it appears.

### Cap K---Degrowth Link---2NC

#### Degrowth is leaner and meaner capitalism -- only by overthrowing capitalism with social movements can prevent mass suffering and environmental devastation

Leigh Brownhill et al. 12, Terisa E. Turner & Wahu Kaara 10 Feb 2012 (Brownhill Ph.D. University of Toronto.) “Degrowth? How About Some “De-alienation”?,” Capitalism nature socialism, https://degrowth.org/wp-content/uploads/2012/11/Brownhill-et-al-dealienation.pdf

As a political project and platform for change, degrowth attracts some ecological economists and academics as well as social movements and political parties. But could it also be adopted by CEOs as part of a business plan, or as a new, more acceptable face of green capitalism for public relations purposes? In this case degrowth might present a means of constructing a leaner and meaner capitalism appropriate to the severe crisis period the world has been in since at least 2008. Degrowth can be seen as a brother to ‘‘green economics,’’ which is ‘‘green capitalism.’’ It could be a ‘‘third way’’ for energy transition-oriented capitalists and their political allies. Or it might provide political rhetoric for the engineers of cutbacks in social services. The pro-austerity ‘‘share the pain’’ invocations to belttightening sound a lot like degrowth.

Bourgeois democracy has it that in the marketplace of ideas, capitalism is the best. So if some capitalists want to opt out of the system by ‘‘degrowing,’’ a market analyst might say, then other capitalists might well expand into the newly ‘‘available’’ markets and continue right on ‘‘growing,’’ like China, right across the southern hemisphere and the globe.

If its principles were seriously taken up and enacted by corporations, consumers, and governments, the resulting ‘‘degrown’’ economy could look like a smaller\*but eerily familiar\*version of what already exists. Couldn’t it turn out like an overweight gym-goer who works out and turns flabby abs into a trim sixpack stomach? Yes, he has ‘‘degrown’’ the fat, but he has gained muscle to become more fit and stronger than before. But we hardly need to resort to metaphors. As governments degrow social services, they expand repressive ones. As economic, political, and ecological crises unfold, we are witnessing increases in military spending around the world along with the proliferation of small arms.

Meanwhile, the same policy makers are on the winning side of the economics of structural adjustment, which appears now to be in full effect in the North. Simultaneously, their disastrous policies continue in the South to devastate human lives and the planet. So if our purpose is to reverse the universal social and ecological disasters of capitalism, is degrowth enough?

In Kenya, then, where millions face emergency levels of hunger and starvation, war and ‘‘terrorism,’’ plus the buildup to a contentious 2012 election, degrowth takes on a hollow ring. Something else is required. Something that deals more deeply with the maladies of 21stcentury capitalism. After all, ‘‘growth’’ for capital in the region has been generated by and has resulted in the ‘‘enclosure’’ and ‘‘dispossession’’ of most Kenyans. While the East African famine of 2011 features drastic spikes in deathrates, in fact, chronic malnutrition and widespread everyday deprivation constitute a perpetual state of humanitarian disaster there (Brownhill 2009b).

Landlessness in Kenya, rooted in and maintained for the benefit of global corporate profit-taking, is the cause of the chronic hunger and malnutrition that stunts growth for a fifth of Kenyan children (resulting from the ‘‘ordinary’’ conditions imposed by IMF and World Bank structural adjustment programs). In our view, the ordinary operations of capitalism in East Africa constitute a de facto crime against humanity.

What is needed to address this dire situation is not the taming and degrowth of the criminal circuits of capital but their wholesale replacement. With what? With more of the home-grown alternatives many local social movements have been engaged in building for two decades and more: dispossessed peoples’ reversal of enclosures of land and other resources, and their defense of existing and new commoning practices and social relations.

From this vantage point, the degrowth of capital is accomplished through the regrowth of commoning. It is emphasis on this expansion of commoning that characterizes East Africa’s already-existing transformational social movements. But this emphasis goes largely unnoted by the degrowthers thus far.

Since around 1990, Kenyans have been building social movements that, like their counterparts worldwide, press for tangible democracy. These movements do not look for ‘‘democracy’’ in elite competitive elections, but in universal citizen engagement in horizontal, particapatory decision-making. Kenyans passed an historic milestone when a new people-positive constitution was affirmed by referendum in August 2010. The struggle to enact the constitution’s good provisions continues.

Across North Africa and the Middle East, peoples’ movements are challenging the powers of capitalist dictatorship. By September 2011, the movement extended further to Occupy Wall Street. This Occupy Together (Occupy Everywhere) movement of the 99 percenters has gone viral, resulting in a virtually global popular occupation of the commons (parks, squares, and streets) and seats of state, financial, and corporate power.

In light of such popular transformations, degrowth could provide important principles for defense of the commons. But this does not seem to be on the horizons of degrowth’s proponents. Note that the Occupy! trajectory of transformation, involving as it does the building of universal participatory democracy, introduces the questions of power and praxis on which the advocates of the degrowth route are notably reticent.

Our objective is to more seriously consider another route to overcoming the disasters of capitalism. For the sake of paralleling the tone and spirit of the term ‘‘degrowth,’’ we call it ‘‘de-alienation.’’ The term calls attention to the problem of ‘‘alienation’’\*from enclosure of land, productive processes, and products to the alienation of people from each other and from themselves\*and the transformational potential of subverting alienation. The discussion of ‘‘de-alienation,’’ and those critically engaged in it, brings us to the center of a perspective that is historically grounded, involves real world actors, and has at its core the exercise of power and counter power.

De-alienation is about action by the exploited and dispossessed, both waged and unwaged. In the face of enclosures by capitalists, those engaged in de-alienation unenclose and re-establish commons. From four aspects of the process of alienation outlined by Marx, we derive four priniciples for undoing alienation. These principles are evident in already-existing social movements and social experiments (for local food, peace, and democratic transformation in North Africa, the Middle East, and worldwide).

Marx conceived of alienation or estrangement as the precursor to the formation of private property in the history of capitalism. From there we elicit the centrality of dealienation to the process of overcoming the capital relation (the social power relation between exploiters and exploited). In a passage from the Economic and Philosophic Manuscripts of 1844, Marx summarized his many-sided understanding of alienation as dehumanization and the killing of nature, extending to the human body, as capitalists drive the process of primitive accumulation and ongoing exploitation

### Cap K---Alt---1NC

#### The alternative is socialist growth---solves the case without austerity politics and an end to human progress

Leigh Phillips 19, political journalist, 8-1-2019, “The degrowth delusion,” openDemocracy, https://www.opendemocracy.net/en/oureconomy/degrowth-delusion/

Yet at the very moment that the socialist case for planning should be at its most obvious, sections of the environmental community have embraced a revival of 'limits to growth' philosophy, or Malthusianism—an ideology the left battled against dating back to Friedrich Engels' arguments against its eponymous founder, Thomas Malthus—this time going by the name of 'degrowth'.

Rallying under the slogan that you can't have infinite growth on a finite planet, the philosophy has been articulated in slightly varying forms by academics such as Jason Hickel, Giorgos Kallis, Kate Raworth and Tim Jackson, and builds on the work of earlier thinkers such as Serge Latouche, Nicholas Georgescu-Roegen, Herman Daly, E.F. Schumacher and the Club of Rome's 1972 Limits to Growth report. But it has also been embraced by green NGOs such as Greenpeace, and America's leading climate campaign group 350.org.

Rather than viewing the market's irrational production as the source of environmental challenges, the degrowth position views the source to be economic growth.

Even some Green New Deal advocates get a little confused when they call for an end to growth as well. (This is an odd position, as it is quite difficult to imagine how trillions in infrastructure spending that created sufficient additional jobs to soak up all unemployment and significantly push up wages would not result in economic growth).

The degrowth argument says that growth drives energy demand up, thus making it harder and perhaps even impossible to decarbonize the economy. But a reduction in material throughput would reduce energy demand, thus making the clean transition more achievable. And to reduce material throughput, we have to reduce aggregate economic activity.

However, what is foreclosed by the notion of degrowth is the possibility of socialist growth: a boundless—if carefully planned—increase in the creation of new value that does not undermine the ecosystem services upon which human flourishing depends. And because degrowth rejects the notion of socialist economic growth, it commits three grave errors. First, degrowth lets off the hook the real source of the problem, thus condemning civilisation to dangerous climate change and parallel ecological threats. Second, degrowth unwittingly endorses what would be an imposition of austerity on the Western working class far beyond anything a Thatcher, Cameron or May could imagine, this time in the name of the planet. And, worst of all, degrowth would bring an end to progress itself—the steady expansion of freedom for all humanity.

### Cap K---Alt---Ext

#### Only planning on mass scales with a socialist structure is effective

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A hundred years after the Russian Revolution, a specter is haunting the West — the specter of what the Economist newspaper recently christened millennial socialism.

But what exactly is meant by socialism this time around? Is it just a return of New Deal liberalism or Scandinavian social democracy? Is it public health care and strong unions? Is it a flowering of cooperatives — as Labour shadow chancellor John McDonnell wants?

And above all, what is the role of the market versus economic planning in our alternative? This surely is where the workers’-council-manufactured rubber hits the state-built road?

As Friedrich Engels wrote, “the government doing stuff” is definitely not a good definition of socialism: “Certainly, if the taking over by the state of the tobacco industry is socialistic, then Napoleon and Metternich must be numbered among the founders of socialism.” Today that would make the statist leviathan known as the Pentagon practically full communism.

Luckily, a new, more interesting conversation about the role of markets and economic planning is emerging, from an unexpected place.

Jack Ma, the founder of China’s Alibaba Group — one of the largest and most valuable companies in the world — argues that previous state planners in the Soviet Union and the early People’s Republic of China failed due to insufficient information. He has predicted that over the next three decades thanks to artificial intelligence and the sheer volume of data to which we now have access, we will finally be able to achieve a planned economy.

Meanwhile, something interestingly “communist” is happening through the shift in recent years from active to passive investing. An investor who has holdings in one airline or telecom, for example, wants it to outperform the others: to increase its profits, even if only temporarily, at others’ expense. But an investor who owns a piece of every airline or telecom, as occurs in a passively managed index fund, has drastically different goals. Competition matters far less. Bloomberg columnist Matt Levine has imagined a slow transition from today’s index funds, which use simple investing strategies, through a future where investing algorithms become better and better, until “in the long run, financial markets will tend toward perfect knowledge, a sort of central planning—by the Best Capital Allocating Robot.”

In The People’s Republic of Walmart, we show how contrary to the historic argument of the likes of free market economists Ludwig Von Mises and Friedrich Hayek, economic planning of millions of products and services involving infinitudes of variables in supply chains and lots of non-price information is not just feasible, but works incredibly well.

Now, Walmart is a terrible entity, home to many labor abuses and lots of downright dull and alienating work, but it’s an interesting case study in the feasibility of planning because of how it operates and just how big it is. Walmart, the largest company in the world, employs more workers than any other private firm; it is the world’s third-largest employer after the US Department of Defense and China’s People’s Liberation Army. If it were a country, its economy would be roughly the size of Switzerland.

Walmart, of course, sells goods on the market. Under capitalism prices are still inputs into the planning process for corporations and states alike. In addition to prices, however, firms today have at their disposal exponentially increasing amounts of information that is directly about people’s preferences or the use of resources. Already, for example, we can minimize carbon emissions in transporting items alongside cost. There is a hard question about how we relate things to one another — cotton to steel or mind-numbing drudgery to art — but it is a poverty of imagination to think only markets can determine these multidimensional comparison questions rather than we ourselves, democratically.

Regardless, Walmart engages in large-scale planning without the direct intermediation of markets at scales to make Hayek bristle. Internally, like nearly all firms large and small, it is a dictatorial planned economy: managers tell workers what to do, departments realize goals from on high, and goods flow by fiat.

Afloat in the market, Walmart is at once an “island of conscious power,” as Keynes’s collaborator D. H. Robertson put it, and an “island of tyranny,” as the social theorist Noam Chomsky rephrased it. Capitalism obscures both the planning and the disciplinary nature of everything that goes on inside the corporation. The market may be free, but work is constant unfreedom. Today’s economy is already to a large degree planned rather than spontaneous — but it’s also home to widespread domination from which we have yet to free ourselves. Doing so will deeply transform how we plan and how we produce.

Walmart’s planning extends beyond its four walls. Commerce scholars and operations research analysts attribute the success of Walmart’s logistical marvel to being among the first to adopt innovations such as continuous replacement; vendor-managed inventory; computerization; and trust, openness, cooperation, and transparency of information all along the supply chain.

Walmart’s planned “firmification” of the supply chain stands in contrast to the disaster that is Sears. CEO Edward Lampert was such a fan of Ayn Rand that upon taking over, he introduced an internal market, with departments competing against each other, resulting in information secrecy, duplication, chaos, and ultimately bankruptcy. Unfortunately, rather than being recognized a failure, an “internal market” is periodically imported into the public sector and is currently contributing to the decline of England’s National Health Service.

The collapse of Sears however pales in comparison to more existential market failures elsewhere.

The world is running out of effective antibiotics because, as everyone from the Centers of Disease Control to the United Kingdom’s former chief medical officer have warned, pharmaceutical giants largely got out of the business of antimicrobial research some thirty years ago due to lack of profitability. A return to a Victorian-style era of medicine is bare decades away without this background of antimicrobial protection.

After twenty years of climate diplomacy, oil firm BP last year reported that the non-fossil share of the energy mix is no different to what it was in 1998. In the face of climate change’s existential threat, we are standing still. This is because a market economy will continue to produce fossil fuels, even in the face of a hothouse earth, if left to its own devices.

Environmental good news in most cases has come from non-market intervention. We have all but solved the challenge of ozone depletion thanks not to the market or giving up our fridges or hair spray, but thanks to regulation. Likewise we have regulation, as well as public sector infrastructure, and state shepherding of innovation—the allegedly inefficient sin of “picking winners”—for the success stories of elimination of acid rain and the 7 percent global increase in tree cover over the last thirty-five years.

This is why the Green New Deal, with its focus on robust public sector planning and action instead of market tweaks is so important. California’s emissions trading is less responsible for that state’s greenhouse gas reductions than its classic command-and-control regulations, and the largest single emissions reduction in North America came from the decision by fiat of the Ontario government to shutter all nineteen of its coal-fired generating units.

The lesson from all these failures and successes is that if something is profitable, no matter how harmful, it will continue to be produced in the absence of non-market intervention, i.e., planning. Likewise, if something is unprofitable, no matter how beneficial, it will not be produced, again in the absence of planning. At the same time, the widespread suspicion of unaccountable bureaucracy and even arbitrary, authoritarian constraint on freedom is correct. Walmart may be a marvel of logistics but it is also one of many private fiefdoms within our market system. Planning on its own is not enough. It has to be truly democratic.

What is common to the economic planners of Walmart and Amazon (or Foxconn and Daimler) is not just planning on vast scales, but a complete lack of democracy. More than half of Walmart’s part-time employees say they do not have enough money to meet their basic needs, with many of the union-busting firm’s staff depending on food-stamps to make ends meet. Amazon fulfillment-center workers pee in bottles out of fear of being fired for going to the bathroom, all the time tracked by wristbands issuing alerts of any milliseconds spent slacking off. On the hottest days of the year, Amazon had paramedics on hand outside the warehouse to treat heat-exhausted workers. Amazon CEO Jeff Bezos, that mustache-less, bald Stalin of online retail, oversees a panoptical, freedomless surveillance capitalism.

We need to use our vast productive resources to better ends — and through politics we can do just that. And as technology allows us to move to a discussion of what sort of planning instead of whether planning, true democratic control of planning both at the enterprise and government level must be the non-negotiable foundation of our vision.

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## Top

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#### Large, consolidated agribusiness is key to yields and exports that support global food security---transition spikes prices and turns environment

Ted Nordhaus 21, founder and executive director of the Breakthrough Institute; and Dan Blaustein-Rejto, director of food and agriculture at the Breakthrough Institute, has conducted research with the Environmental Defense Fund, International Center for Tropical Agriculture, and Farmers Market Coalition, 4/18/21, “Big Agriculture Is Best,” <https://foreignpolicy.com/2021/04/18/big-agriculture-is-best/>

In the popular bourgeois imagination, the idealized farm looks something like the ones that sell produce at local farmers markets. But according to our research, while small farms like these account for close to half of all U.S. farms, they produce less than 10 percent of total output. The largest farms, by contrast, account for about 50 percent of output, relying on simplified production systems and economies of scale to feed a nation of 330 million people, vanishingly few of whom live anywhere near a farm or want to work in agriculture. It is this central role of large, corporate, and industrial-style farms that critics point to as evidence that the food system needs to be transformed.

But U.S. dependence on large farms is not a conspiracy by big corporations. Without question, the U.S. food system has many problems. But persistent misperceptions about it, most especially among affluent consumers, are a function of its spectacular success, not its failure. Any effort to address social and environmental problems associated with food production in the United States will need to first accommodate itself to the reality that, in a modern and affluent economy, the food system could not be anything other than large-scale, intensive, technological, and industrialized.

An abandoned tenant house is seen across fields in Hall County, Texas, in June 1938. The Library of Congress caption notes: “Many tenants who have filled the land on the family-farm basis were made landless, forced by the machine into the towns, or reduced to day labor on the farms. Large numbers who have gone to the towns have fallen on relief, or even have sought refuge in distant parts. Not only is their security gone, but the opportunity even to rise to ownership is diminished, for profitable operation of mechanized farms requires more land and more capital equipment per farm.” Library of Congress

Not so long ago, farming was the principal occupation of most Americans. More than 70 percent labored in agriculture in 1800. As late as 1900, some 40 percent of the U.S. labor force still worked on farms. Today, that figure is less than 2 percent.

The consolidation of U.S. agriculture has been underway for more than 150 years. First came irrigation and ploughs, then better seeds and fertilizers, and then tractors and pesticides. With each innovation, farmers were able to produce larger harvests with fewer people and work larger plots of land. Better opportunities drew people to cities, where they could get jobs that provided higher wages and, thereby, produced greater economic surplus—that is, profits and ultimately societal wealth. The large-scale migration of labor from farms to cities pushed farmers to invest even more in labor-saving and productivity-enhancing practices and technologies in a virtuous cycle of urbanization, agricultural intensification, and economic growth that is the hallmark of all affluent societies.

It is not a stretch to say that the United States is wealthy today because most of its people work in manufacturing, services, technology, and other sectors of the economy. In this, the country is not alone. No nation has ever succeeded in moving most of its population out of poverty without most of that population leaving agriculture work.

That transition often isn’t easy. Millions of Black Americans made the difficult journey from tenant farming in the South to factory work in the North, where they faced new forms of racism even as they escaped the tyranny of sharecropping. More recently, small farmers have struggled to survive as increasingly high agricultural productivity and falling commodity prices tilted the playing field toward large farms. Rural communities have likewise suffered as dramatic improvements in labor productivity have shrunk employment in agriculture.

But over the long term, the living standards and life opportunities offered in the modern knowledge, service, and manufacturing economies have proved vastly greater than anything possible under the agrarian social and economic arrangements that most Americans over the last two centuries happily abandoned—and that too many Americans today romanticize.

Modern life required not only liberating most Americans from agrarian labor but also the development of a food system capable of getting food from farms to the cities where increasing numbers of Americans lived and worked. A food system that lost much of its harvest to pests and spoilage needed to dramatically cut losses even as its bounty needed to travel farther and farther. For this reason, the rise of modern agriculture is as much a story of railways and highways as combines and tractors, refrigeration and grain elevators as pesticides and fertilizer.

The development and growth of feedlots followed a similar path. As the historian Maureen Ogle recounts in her magnificent history of the beef industry, In Meat We Trust, the first feedlots grew out of the stockyards of Chicago and Kansas City in the late 19th century. The most efficient way to get beef to burgeoning markets in America’s cities was to drive cattle to these new rail centers, where they were finished, slaughtered, and then shipped throughout the country by rail. After World War II, beef production and feedlots expanded massively, driven not so much by corporate greed as by rising demand for beef from the United States’ newly prosperous middle class and by a scarcity of labor as ranch hands returning from the battlefields of Europe and the Pacific chose to pursue better economic opportunities in the postwar economy.

Debates about the social and environmental impacts of America’s food system cannot be disentangled from the basic reality that in a modern industrialized society, most people will live in cities and suburbs and will not work in agriculture. As a result, most food will need to be produced by large farms, with little labor, far away from the people who will consume it.

Many sustainable agriculture advocates tout the recent growth of organic agriculture as proof that an alternative food system is possible. But growing market share vastly overstates how much food is actually produced organically. In reality, organic production accounts for little more than 1 percent of total U.S. agricultural land use. Meanwhile, only a bit more than 5 percent of food sales come from organic producers, mostly because organic sales are overwhelmingly concentrated in high-value sectors of the market, namely produce and dairy, and fetch a premium from well-heeled consumers.

Moreover, organic farms, large and small, don’t actually outperform large conventional farms by many important environmental measures. Scale, technology, and productivity make good environmental sense and economic sense. Because organic farming requires more land for every calorie or pound produced, a large-scale shift to organic farming would entail converting more forest and other land to farming, resulting in greater habitat loss and more greenhouse gas emissions. And while organic farming doesn’t use synthetic pesticides or fertilizers, it often results in greater nitrogen pollution because manure is a highly inefficient way to deliver nutrients to crops.

Another benefit of large-scale U.S. farms is that because they are so efficient, economically and environmentally, they are also able to produce vastly more food than Americans can consume, making the country the world’s largest agricultural exporter as well.

That benefits the U.S. economy, of course, but it also comes with an environmental benefit for the world. In the contemporary environmental imagination, highly productive, globally traded agriculture is a bad thing—poisoning the land at home and undermining food sovereignty abroad. But in reality, a pound of grain or beef exported from the United States almost always displaces a pound that would have been produced with more land and greenhouse gas emissions somewhere else.

#### That causes global war

John Castellaw 17, member of the Center for Climate and Security’s Advisory Board, formerly president of the Crockett Policy Institute, 5/1/17, “Opinion: Food Security Strategy Is Essential to Our National Security,” <https://www.agri-pulse.com/articles/9203-opinion-food-security-strategy-is-essential-to-our-national-security>

The United States faces many threats to our National Security. These threats include continuing wars with extremist elements such as ISIS and potential wars with rogue state North Korea or regional nuclear power Iran. The heated economic and diplomatic competition with Russia and a surging China could spiral out of control. Concurrently, we face threats to our future security posed by growing civil strife, famine, and refugee and migration challenges which create incubators for extremist and anti-American government factions. Our response cannot be one dimensional but instead must be a nuanced and comprehensive National Security Strategy combining all elements of National Power including a Food Security Strategy.

An American Food Security Strategy is an imperative factor in reducing the multiple threats impacting our National wellbeing. Recent history has shown that reliable food supplies and stable prices produce more stable and secure countries. Conversely, food insecurity, particularly in poorer countries, can lead to instability, unrest, and violence.

Food insecurity drives mass migration around the world from the Middle East, to Africa, to Southeast Asia, destabilizing neighboring populations, generating conflicts, and threatening our own security by disrupting our economic, military, and diplomatic relationships. Food system shocks from extreme food-price volatility can be correlated with protests and riots. Food price related protests toppled governments in Haiti and Madagascar in 2007 and 2008. In 2010 and in 2011, food prices and grievances related to food policy were one of the major drivers of the Arab Spring uprisings. Repeatedly, history has taught us that a strong agricultural sector is an unquestionable requirement for inclusive and sustainable growth, broad-based development progress, and long-term stability.

The impact can be remarkable and far reaching. Rising income, in addition to reducing the opportunities for an upsurge in extremism, leads to changes in diet, producing demand for more diverse and nutritious foods provided, in many cases, from American farmers and ranchers. Emerging markets currently purchase 20 percent of U.S. agriculture exports and that figure is expected to grow as populations boom.

Moving early to ensure stability in strategically significant regions requires long term planning and a disciplined, thoughtful strategy. To combat current threats and work to prevent future ones, our national leadership must employ the entire spectrum of our power including diplomatic, economic, and cultural elements. The best means to prevent future chaos and the resulting instability is positive engagement addressing the causes of instability before it occurs.

This is not rocket science. We know where the instability is most likely to occur. The world population will grow by 2.5 billion people by 2050. Unfortunately, this massive population boom is projected to occur primarily in the most fragile and food insecure countries. This alarming math is not just about total numbers. Projections show that the greatest increase is in the age groups most vulnerable to extremism. There are currently 200 million people in Africa between the ages of 15 and 24, with that number expected to double in the next 30 years. Already, 60% of the unemployed in Africa are young people.

Too often these situations deteriorate into shooting wars requiring the deployment of our military forces. We should be continually mindful that the price we pay for committing military forces is measured in our most precious national resource, the blood of those who serve. For those who live in rural America, this has a disproportionate impact. Fully 40% of those who serve in our military come from the farms, ranches, and non-urban communities that make up only 16% of our population.

Actions taken now to increase agricultural sector jobs can provide economic opportunity and stability for those unemployed youths while helping to feed people. A recent report by the Chicago Council on Global Affairs identifies agriculture development as the core essential for providing greater food security, economic growth, and population well-being.

Our active support for food security, including agriculture development, has helped stabilize key regions over the past 60 years. A robust food security strategy, as a part of our overall security strategy, can mitigate the growth of terrorism, build important relationships, and support continued American economic and agricultural prosperity while materially contributing to our Nation’s and the world’s security.

#### U.S. leadership on high-tech solutions to food security’s key to global climate progress and successful competition against China

Gordon M. Goldstein 21, an adjunct senior fellow at the Council on Foreign Relations; and Erik R. Oken, 4/22/21, “America’s New Challenge: Confronting the Crisis in Food Security,” https://www.cfr.org/blog/technology-and-youth-represent-nigerias-path-out-woods

The Biden administration has encouraged the world with its renewed commitment to the Paris accord and the goal of combatting the existential challenge of global climate change. But that bold objective will not be achieved without a comprehensive parallel American exercise of leadership to confront the crisis in food security. Such a strategy is imperative on a global basis and critical to U.S. domestic policy. The challenge of food security will require leveraging advances in technology and demand policy innovation within the U.S. government and deep cooperation between the public and private sectors. If not tackled comprehensively and effectively, failure to mitigate the crisis in the sustainability of our global food supply chain will devastate the multilateral effort to arrest climate change.

The global dimensions of food instability are staggering. As the global population grows to a projected 10 billion in 2050, with a concurrent growth in income, overall food requirements are forecast to increase [PDF] by more than 50 percent. The demand for resource-intensive foods like meat and dairy is projected to grow by 70 percent.

The crisis in food sustainability displays a disturbing daily cadence. The world has lost 1,000 football fields worth of forest every hour, almost 30 million acres annually. According to a recent scientific study, climate change has diminished global food productivity by more than 20 percent over the past 60 years. If crop and pasture yields continue to grow as projected, by 2050 agricultural land will need to increase by an area nearly twice the size of India.

Not surprisingly, the world’s most populous and wealthy countries contribute the most to the crisis in food sustainability. Roughly 40 percent of greenhouse gas emissions from agriculture are clustered in four countries—the United States, China, India and Brazil. Since 1990, roughly 24 percent of global Greenhouse Gas Emissions can be attributed to the food system and our disproportionate reliance on livestock. Further exacerbating the problem is the methane produced in the agriculture industry, which is ~30 to ~80 times as deleterious to the environment as carbon dioxide.

The United States suffers from its own acute national challenges. Estimates suggest 23 million people live in so-called “food deserts”—low-income areas with poor access to healthy food. The pandemic, which has led to over 50 million Americans facing food insecurity, has illustrated the weakness in our food system and supply chain resiliency. Americans in lower income segments spend 30-40 percent of their income on food. The food security crisis in the United States has recently prompted the Biden administration to propose tens of billions of dollars of new federal assistance to American families at risk.

The United States has historically used food policy to strengthen its relationship with friends and allies through initiatives such as the U.S. Food for Peace Program, the 1960’s “Green Revolution” or the so-called “Third Agricultural Revolution” which featured research and technology transfers that significantly increased agricultural production globally while feeding millions and increasing U.S. influence worldwide.

The United States is once again poised to use its rich history of innovation in foreign agricultural policy to both enhance its influence with friends and allies where food insecurity is a major issue—the Middle East, Africa, and emerging economies in Asia. These include some of the same countries that China is courting through its “Belt and Road” initiative, which seeks to construct a massive infrastructure network around the world.

The United States should leverage its private and public sources of capital and innovation, in partnership with new and incumbent players in the corporate community, to accelerate the transition to global food sustainability.

Advances in emerging technologies hold the promise to both alleviate the food crisis and amplify American influence abroad. The next era of food sustainability will be influenced by breakthroughs in global technology such as fifth generation telecommunications, robotics, artificial intelligence, and nanotechnology. Specific areas of technology investment that will contribute to higher levels of productivity and efficiency in food generation with a decreased impact on the environment encompass initiatives in agricultural biotechnology, such as genetics, microbiome, breeding and animal health; alternative food products, including plant-based forms of alternative protein, which are surging in popularity and adoption; farm management systems, including sensing and data analytics software; farm robotics, including automation and drone based monitoring; and new farming structures, such as indoor farming and aquaculture.

In addition, the Biden administration needs to drive tax, investment, regulatory and subsidy policies that encourage the increased flow of capital into the transition to viable food sustainability strategies, including investment into cell-based and plant-based meats; the wider implementation of regenerative agriculture practices, including agribusiness marketplaces and farm robotics, mechanization and equipment; and, finally, the reduction of waste throughout the food value chain. The companies and countries that are the leaders in these areas of innovation will not only strengthen global food supply but also capture the intellectual property, information and data that is embedded in the global food supply chain. In addition to addressing an urgent global challenge, American innovation in food security would support the goals of the Strategic Competition Act of 2021, bipartisan legislation crafted by the Senate Foreign Relations Committee that seeks to counter China’s growing economic and geopolitical and technology competition with the United States.

Meeting the food sustainability challenge will require creativity and a new level of engagement between the public and private sectors. The Biden administration should consider creating a high-level commission of government and private sector experts to compose a multifaceted food sustainability strategy. That group should include the former secretary of state, John Kerry, who has been appointed the president’s special envoy for climate change; the secretary of agriculture, Tom Vilsack; representatives of the National Security Council and the National Economic Council; the Administration for International Development as well as other government agencies working in concert with corporate, academic, and think tank leaders on the issue of food sustainability.

The world is hungry for American leadership in the quest to solve the food security crisis. It is time for Washington to act ambitiously, applying imagination and strategic determination to this seminal twenty-first century problem.

#### China’s exercising innovation warfare. US tech innovation’s key to prevent world war.

Jeanne Suchodolski et al 20, an attorney with the United States Navy Office of General Counsel where she currently serves as Patent and Intellectual Property Counsel for the Naval Undersea Warfare Center Division Keyport, Bowman Heiden is the co-director of the Center for Intellectual Property and visiting professor at University of California, Berkeley, Suzanne Harrison is the Founder of Percipience, LLC, a board-level advisory firm focused on intellectual property strategy, management, and quantifying and mitigating intellectual property risk, “Innovation Warfare,” 2 N.C. J.L. & Tech. 175, December 2020, lexis.

[\*176] I. INTRODUCTION

Innovation, in particular, technology-based innovation, is the key driver for both economic competitiveness and national security. Other nations, with interests adverse to the United States, recognize this fact. In an increasingly interconnected world, nation states seek to accumulate innovation prowess, and hence economic strength, as a key element of their geopolitical power. Especially savvy nation states also pursue such ends as a mechanism to influence or diminish the national security and geopolitical power of the United States. [\*177] There is no need to inflict upon the world the carnage of war if one's geopolitical aims can be achieved via alternative competitive means.

Several authors suggest China's long-term ambitions include unseating the United States as the world's economic and political leader. 1 More compelling than opinions, several United States ("U.S.") government and private studies document a systematic and coordinated effort by China to achieve technical and economic dominance through misappropriation of U.S. technology. 2 These efforts are additionally supported by a companion effort to weaken international economic institutions and norms designed to protect U.S. intellectual property and free trade. 3 The Chinese tactics include illegal means, and sophisticated use of legal means, to [\*178] misappropriate U.S. technology and weaken the U.S. innovation infrastructure including:

a) Leveraging the open university and laboratory ecosystem via direct sponsorship and engagement of Chinese nationals; 4

b) Devaluing U.S. positions in patents and technology platforms; 5 and

c) Accessing private sector U.S. technology through acquisitions and ownership stakes in existing firms, funding of high-tech start-ups, and forced joint ventures and other contractual agreements as a prerequisite for entering the Chinese market. 6

This particular form of competitive strategy targeting the innovation ecosystem in the United States is labeled by the Authors as "Innovation Warfare," 7 and it is defined as an executable competitive strategy:

a) Reflecting an innovation, intellectual property, and technology strategy articulated and executed by the state (e.g. China);

b) Using illegal means, political means, and legal economic activities--of the type previously residing solely in the province of commercial enterprise, to achieve the state's objectives;

c) Employing these economic and innovation activities to achieve both economic geopolitical power and to enhance military capabilities; and

[\*179] d) Functioning as a military, national security, and defense doctrine not solely as a reflection of the state's economic policy goals nor commercial competition in the ordinary course.

Innovation Warfare does not just threaten American jobs and economic prosperity. By simultaneously co-opting and weakening the innovation capabilities of the United States, China seeks to advance its rise to world power. China's prosecution of Innovation Warfare not only encompasses a rejection of a rules-based international order, but also poses an existential threat. A world where China dominates the technology landscape is not just about who earns the profits or prevails in an abstract geopolitical fight. According to the National Security Strategy of the United States of America (" National Security Strategy"), China pursues a world in which economies are less free, less fair, and less likely to respect human dignity and freedoms. 8 China's Innovation Warfare activities risk the type of economic and geopolitical aggressions that were a root cause of two World Wars.

America must urgently articulate and execute a defensive Innovation Warfare counterstrategy. At its core, Innovation Warfare strategies are about seizing control of the technological future(s), thereby securing a dominant economic and security position from which to accomplish other geopolitical aims. In view of that central observation and the necessity for a coherent response, this Article proposes a four-step approach to crafting and executing the needed Innovation Warfare counterstrategy:

### Overview---2NC

#### Goes nuclear

FDI 12 – Future Directions International, an independent, not-for-profit Research Institute established to conduct comprehensive research of important medium to long-term issues facing Australia, 5/25/12, “International Conflict Triggers and Potential Conflict Points Resulting from Food and Water Insecurity,” https://www.futuredirections.org.au/wp-content/uploads/2012/05/Workshop\_Report\_-\_Intl\_Conflict\_Triggers\_-\_May\_25.pdf

There is a growing appreciation that the conflicts in the next century will most likely be fought over a lack of resources.

Yet, in a sense, this is not new. Researchers point to the French and Russian revolutions as conflicts induced by a lack of food. More recently, Germany’s World War Two efforts are said to have been inspired, at least in part, by its perceived need to gain access to more food. Yet the general sense among those that attended FDI’s recent workshops, was that the scale of the problem in the future could be significantly greater as a result of population pressures, changing weather, urbanisation, migration, loss of arable land and other farm inputs, and increased affluence in the developing world.

In his book, Small Farmers Secure Food, Lindsay Falvey, a participant in FDI’s March 2012 workshop on the issue of food and conflict, clearly expresses the problem and why countries across the globe are starting to take note. .

He writes (p.36), “…if people are hungry, especially in cities, the state is not stable – riots, violence, breakdown of law and order and migration result.”

“Hunger feeds anarchy.”

This view is also shared by Julian Cribb, who in his book, The Coming Famine, writes that if “large regions of the world run short of food, land or water in the decades that lie ahead, then wholesale, bloody wars are liable to follow.”

He continues: “An increasingly credible scenario for World War 3 is not so much a confrontation of super powers and their allies, as a festering, self-perpetuating chain of resource conflicts.” He also says: “The wars of the 21st Century are less likely to be global conflicts with sharply defined sides and huge armies, than a scrappy mass of failed states, rebellions, civil strife, insurgencies, terrorism and genocides, sparked by bloody competition over dwindling resources.”

As another workshop participant put it, people do not go to war to kill; they go to war over resources, either to protect or to gain the resources for themselves.

Another observed that hunger results in passivity not conflict. Conflict is over resources, not because people are going hungry.

A study by the International Peace Research Institute indicates that where food security is an issue, it is more likely to result in some form of conflict. Darfur, Rwanda, Eritrea and the Balkans experienced such wars. Governments, especially in developed countries, are increasingly aware of this phenomenon.

The UK Ministry of Defence, the CIA, the US Center for Strategic and International Studies and the Oslo Peace Research Institute, all identify famine as a potential trigger for conflicts and possibly even nuclear war.

### Overview---Climate Impact

#### Goldstein says U.S. food leadership sustains multilateral progress on climate change---that solves extinction

David Spratt 19, Research Director for Breakthrough National Centre for Climate Restoration, Ian Dunlop, member of the Club of Rome, formerly an international oil, gas and coal industry executive, chairman of the Australian Coal Association, May 2019, “Existential climate-related security risk: A scenario approach,” https://docs.wixstatic.com/ugd/148cb0\_b2c0c79dc4344b279bcf2365336ff23b.pdf

An existential risk to civilisation is one posing permanent large negative consequences to humanity which may never be undone, either annihilating intelligent life or permanently and drastically curtailing its potential.

With the commitments by nations to the 2015 Paris Agreement, the current path of warming is 3°C or more by 2100. But this figure does not include “long-term” carbon-cycle feedbacks, which are materially relevant now and in the near future due to the unprecedented rate at which human activity is perturbing the climate system. Taking these into account, the Paris path would lead to around 5°C of warming by 2100.

Scientists warn that warming of 4°C is incompatible with an organised global community, is devastating to the majority of ecosystems, and has a high probability of not being stable. The World Bank says it may be “beyond adaptation”. But an existential threat may also exist for many peoples and regions at a significantly lower level of warming. In 2017, 3°C of warming was categorised as “catastrophic” with a warning that, on a path of unchecked emissions, low-probability, high-impact warming could be catastrophic by 2050.

The Emeritus Director of the Potsdam Institute, Prof. Hans Joachim Schellnhuber, warns that “climate change is now reaching the end-game, where very soon humanity must choose between taking unprecedented action, or accepting that it has been left too late and bear the consequences.” He says that if we continue down the present path “there is a very big risk that we will just end our civilisation. The human species will survive somehow but we will destroy almost everything we have built up over the last two thousand years.”11

Unfortunately, conventional risk and probability analysis becomes useless in these circumstances because it excludes the full implications of outlier events and possibilities lurking at the fringes.12

Prudent risk-management means a tough, objective look at the real risks to which we are exposed, especially at those “fat-tail” events, which may have consequences that are damaging beyond quantification, and threaten the survival of human civilisation.

Global warming projections display a “fat-tailed” distribution with a greater likelihood of warming that is well in excess of the average amount of warming predicted by climate models, and are of a higher probability than would be expected under typical statistical assumptions. More importantly, the risk lies disproportionately in the “fat-tail” outcomes, as illustrated in Figure 1.

#### And, Goldstein says food innovation’s key to U.S. alliances---breakdowns cause nuclear war

Jesse C. Johnson 19, Associate Professor of Political Science and Director of Peace Studies at the University of Kentucky; and Stephen Joiner, graduate student at the University of Kentucky in the area of International Relations and Comparative Politics, 3/7/19, “Power changes, alliance credibility, and extended deterrence,” Conflict Management and Peace Science, doi:10.1177/0738894218824735

World leaders often rely on military alliances to facilitate extended deterrence and preserve peace. However, alliances do not always deter and states with allies committed to their defense find themselves challenged militarily. When alliances fail to deter, peace is disrupted and a heightened probability of costly warfare among multiple states emerges. Moreover, the advent of nuclear weapons makes the failure of extended deterrence particularly concerning. Our study seeks to explain why some alliances are better able to deter these potentially deadly disputes.

To explain why some alliances are more effective at deterrence than others, we focus on variation in the credibility of alliances. In order for an alliance to deter a potential challenger, the potential challenger must believe that the alliance is likely to be honored and that it will face a multilateral effort in the event of war. Therefore, one reason why some alliances may fail is that they are not viewed as credible by potential challengers. This explanation implies that there is something observable to potential challengers that allows them to differentiate between alliances that will be honored and ones that will be violated.

We draw on insights from research on alliance reliability to identify a factor that is observable to potential challengers and is associated with higher rates of alliance violation. Previous research finds that significant changes in power by alliance members since the time of alliance formation has the biggest effect on whether a member will violate the alliance (Leeds, 2003a). We argue that adversaries can observe these changes in power which will cause them to question the reliability of the alliance. As a result, an alliance that experiences changes in power will be less likely to deter the initiation of interstate disputes than alliances that have not experienced these changes. An appealing feature of this explanation is that it does not imply that states pay costs to form alliances that are not credible and will fail to deter. According to this perspective, states form alliances that are credible but over time the members’ power changes, the alliance becomes less credible, and other states become more willing to challenge them.

This hypothesis is tested with an empirical analysis of militarized dispute initiation against states with allies committed to defend them. To construct the analysis we identify the power of each ally, compare their power with when they entered into the alliance, and then generate a variety of measures that capture whether there was a significant power change since alliance formation. All of the measures provide consistent support for our hypothesis. Potential challengers are more likely to initiate militarized interstate disputes against states with allies that have experienced significant changes in power since alliance formation than states with allies that have not experienced significant power changes since alliance formation. The result even holds for asymmetric alliances but only in instances of significant power decreases by the dominant power.

Our analysis contributes to the study of extended general deterrence by moving research beyond the initial question of whether alliances deter and towards an understanding of when alliances deter. Alliances sometimes succeed at deterrence and sometimes fail. Identifying factors that undermine the deterrence effect of alliances can alert policymakers of potentially faulty extended deterrence relationships. Additionally, it provides scholars with a better understanding of the process that results in alliance commitments being invoked by war. Influential models of alliances and conflict suggest that challengers’ incentives to target unreliable alliances drive this process but there is little evidence to suggest that this occurs (Smith, 1995, 1996, 1998). Our findings provide empirical support for the notion that challengers target states with less reliable partners and identify a key factor they use to discern the reliability of commitments. We explore potential implications of this for research on alliance reliability in the conclusion of the paper.

### Overview---Turns Case

#### Ag innovation solves the case---allows increased yields that solve food security, while net reducing ag’s environmental impacts

Julian M. Alston 20, Distinguished Professor of Agricultural and Resource Economics and Director of the Robert Mondavi Institute at University of California, Davis; and Philip Pardey, Professor of Science and Technology Policy in the Department of Applied Economics, and Director of the University of Minnesota's International Science and Technology Practice and Policy center, May 2020, “INNOVATION, GROWTH AND STRUCTURAL CHANGE IN AMERICAN AGRICULTURE,” https://www.nber.org/system/files/working\_papers/w27206/w27206.pdf

Looking forward, we can see great potential for new product and process innovations—in particular digital and other data- and knowledge-intensive technologies, including genetic innovations—that will enable more and better food, fiber, and industrial raw materials to be produced on farms at much lower cost and with a smaller environmental footprint, worldwide. Realizing this potential will matter for the future trajectory of global public goods including climate change, other natural resource stocks, the world food equation, poverty and related civil or military strife. The extent to which these opportunities will be captured, and when, will be determined to a great extent by forces outside agriculture and outside the R&D and technology sector. These forces will determine the availability and direction of resources available for public-sector agricultural R&D, the regulations and rules governing the development, deployment, and adoption of new farm and food technologies, and the demand for products depending on the technologies used to produce them.

Induced Innovation

As noted above, agriculture is unusual in that it faces knowledge depreciation arising from climate change and, in particular, the coevolution of pests and diseases. This gives rise to a demand for maintenance R&D—simply to preserve past productivity gains. Much of the past work on crop varietal innovations can be seen in this light. The demand for innovation on farms is also driven by changing factor supply conditions, evolving demand for farm products (now including feedstock for biofuels and other industrial raw materials as well as traditional feed, food and fiber), and the peculiar regulatory environment for agriculture related to issues including varietal technologies, animal welfare in livestock production, and landscape amenities (and dis-amenities) from agricultural production. Farmers also face a changing market environment with demands for food products and food production processes mediated through private standards and mass media messages.

Over the long history, a major element of change was labor-saving innovation induced by farm labor scarcity. Past labor savings notwithstanding, reliable and timely availability of suitably skilled labor is a major concern of farmers today—especially in California’s labor demanding specialty crops—and they are actively seeking technological alternatives for harvesting, weeding, irrigating, and a host of other farm operations as well as post-farm packing and handling. 24 Farmers are also increasingly concerned over the reliability of natural rainfall and irrigation water, with variability and uncertainty in these dimensions exacerbated by climate change. Drought- and heat-tolerant varieties are being developed to mitigate these consequences (see, e.g., Cooper et al. 2014 and McFadden et al. 2019 in the case of drought-tolerant corn). Information technologies combined with more precise and selective water delivery systems can reduce total water usage and vulnerability to drought.

Changing technological regulations generate a demand for replacement technologies. In recent years significant agricultural pesticides have been banned in some jurisdictions and are threatened in others owing to concern about their risks to the environment or human health.25 These include soil fumigants (e.g., methyl bromide), insecticides (e.g., neonicotinoids) and herbicides (e.g., glypohosate aka Roundup®). When significant pesticides are deregistered, farmers demand new solutions. In some cases, the alternative to a banned chemical is another chemical or new genetics, but sometimes it simply means technological regression. For example, Roundup-resistant® varieties of corn, soybeans, and canola, combined with the herbicide glyphosate, permitted the widespread adoption of lo-till or no-till production systems that resulted in significant improvements in soil structure and reduced greenhouse gas emissions. If glyphosate were to be banned in the United States and Canada—as it has been (either totally or for selected uses) in some other countries recently—we could expect to see a reversion to older production systems using mechanical tillage for weed control and environmentally less benign herbicides. The pressure will be on to come up with an alternative to glyphosate that will be as effective for farmers and more acceptable to the regulators. This is a serious challenge.

Agriculture has generated various other environmental concerns related to air pollution (including greenhouse gases, particulate matter, and odors from livestock production) and water pollution (including nitrates in groundwater and surface water giving rise to human health and environmental issues). With increasing awareness of these issues, and the likelihood of government intervention in one form or another, demand is growing for alternative technologies that will enable more precise use of inputs and better control of unwanted outputs. Likewise, whether motivated by animal welfare concerns or other issues, new regulations over livestock production practices—such as castration; dehorning; pens for calves, sows, and egg-laying hens; use of antibiotics and other veterinary medicines—give rise to demand for new technologies.

In many instances, genetic innovations offer promising solutions to the problems created by the changing regulatory environment. However, genetic technologies also are subject to considerable regulatory weight. The science of genetic innovation has improved by leaps and bounds over recent decades, but society has placed arbitrary strictures (unsupported by scientific evidence) over some of the most powerful tools in the tool-kit available to the modern-day geneticist. In the United States, genetically engineered crop varieties are subject to much greater regulatory control than their conventionally bred counterparts, even though they pose no greater risk to human health or the environment (see, e.g., Qaim 2018). In many other countries, GE crops are effectively banned. More recent innovations, such as gene-editing techniques, promise much greater possibilities for targeted genetic changes in commercial species, but they too might face serious regulatory barriers that could stifle that potential.26 Some countries have already opted to treat gene-edited varieties as GMOs, subject to severe restrictions (see, e.g., Wight 2018, regarding the European Court of Justice ruling regarding the use of gene editing in the EU).

It is not easy to get a good handle on the innovations in the pipeline or on the drawing board, especially since so much of what is going on is being undertaken privately, and in private—in particular when we talk about digital agriculture but also for some aspects of genetic innovations.27 As we have discussed, genetic innovation in plants and animals includes the results from conventional breeding (albeit supported by the tools of modern biotechnology such as marker-assisted breeding), genetic engineering, and gene-editing. Much of the emphasis of this work tends to be focused on the main agricultural species and the main production systems, for sound economic reasons. Apart from yield potential, tolerance of abiotic stresses (drought, frost, and heat), and resistance to pests and diseases, crop geneticists are looking for various other agronomic advantages and product quality attributes. In the case of apples and table grapes, for example, fruit quality attributes are an important focus of private and public breeding efforts and varieties in use are changing rapidly.28

As noted, digital farming innovations (including precision technologies and variable rate technologies) have the potential to save (and also reduce dependence on uncertain supplies of) labor and irrigation water; they also have the potential to save on materials and reduce environmental spillovers associated with fertilizers and pesticides (see, e.g., Schimmelpfennig 2018). Some of these technologies also have the potential to reduce the requirement for farm labor to perform dangerous and arduous tasks that can be done better by machines. Some of these prospects will be enhanced by government policies and the political action of various interest groups, including the woke food policy movement, and others will be hampered. Issues have begun to arise over the IP rights to the data generated by farmers about their business, using machines embodying technology owned by others (AFBF 2018; Janzen 2019). A related issue is the changing scope for farmers as “tinkerers” to economically modify increasingly complex and sophisticated technologies. There can be no doubt farmers will be continue to be busy tinkering, modifying machines and using them in ways that were not imagined by the engineers that built them in the first instance, but it seems likely that an increasing share of the total innovation in American agriculture will be based on patented technologies developed in the per profit sector, continuing recent trends—whether we are talking about mechanical, genetic, chemical or digital technologies.

#### U.S. ag R&D means the net, global environmental impact of the ag sector’s dramatically lower

Uris Baldos 21, Research Assistant Professor in Agricultural Economics at Purdue University; and Dan Blaustein-Rejto, director of food and agriculture at the Breakthrough Institute, has conducted research with the Environmental Defense Fund, International Center for Tropical Agriculture, and Farmers Market Coalition, 2021, “INVESTING IN PUBLIC R&D FOR A COMPETITIVE AND SUSTAINABLE US AGRICULTURE,” https://s3.us-east-2.amazonaws.com/uploads.thebreakthrough.org/Uris-Memo\_Fine.pdf

Sustained productivity growth of the US agricultural sector is crucial to ensure global competitiveness and improve the efficiency of land and other farm input use. Productivity growth, associated with the adoption of new technologies such as crop varieties, has driven more than a two-fold increase in US production since the 1950s, while US agricultural land use has fallen (Bigelow & Borchers, 2017; USDA ERS, 2015).

It is well-established that publicly funded agricultural research and development (R&D), primarily conducted in universities and government institutions, is a major source of new agricultural technologies and knowledge and is economically beneficial (Alston et al., 2011; Andersen & Song, 2013; Jin & Huffman, 2016). It also complements other agricultural extension, private R&D, and other productivity-enhancing activities (Heisey, Wang & Fuglie 2011). Yet funding for US public agricultural R&D has stagnated in recent decades, a sharp contrast with funding growth in other world regions, particularly China, where total public agricultural R&D has surpassed that of the US since 2008 (Clancy et al. 2016). This trend could erode US competitiveness in world agricultural markets, prompting economists to call for at least doubling US public agricultural R&D (Alston 2018).

It is less firmly established what effect increasing US public R&D spending and productivity growth would have on global environmental impacts from agriculture, particularly greenhouse gas (GHG) emissions. Several studies have estimated that global yield increases and R&D have historically reduced cropland area and GHG emissions (Burney, Davis & Lobell 2011; Stevenson et al. 2013). Other studies at the global level have projected that increasing average global yields in the future would reduce the amount of land and other farm input use as well as their associated GHG emissions (Valin et al. 2013; Jones & Sands 2013; Lobell et al. (2013) consider). For the US specifically, Villoria (2019) estimated that raising productivity, and thus global competitiveness, has historically increased domestic cropland area — a ‘rebound effect’ — but reduced global land use. However, this and other studies did not specifically estimate the effects of US public agricultural R&D spending on global GHGs.

This study contributes to the literature by assessing domestic and global GHG, cropland, and crop production impacts from increased crop productivity growth due to increased US public R&D investments. To the best of our knowledge, this is the first such study conducted. This study also builds upon previous work by using the latest data and parameter estimates on the historical gains from US R&D spending (Baldos et al., 2018) and technological spillovers to the rest of the world (Fuglie, 2017) to calculate the implied growth in agricultural productivity from R&D spending increases. In contrast to several similar studies, our analysis is limited to crop production; however we plan to extend the analysis to include livestock.

Our results indicate that US productivity growth alone cannot reduce cropland, input use, and associated emissions in the US, which would all rise as domestic production increases with greater international competitiveness. At the same time, global environmental impacts would fall thanks to US agriculture improving its GHG intensity and taking up a greater share of global production. Ensuring that technological advances from US R&D “spill over” to the rest of the world, as they historically have, amplifies the global benefit. We also find that strictly constraining US cropland and farm input use — though decreasing global cropland, and GHG emissions — would decrease production and substantially increase crop prices.

### UG99 Impact---2NC

#### Specifically Ug99---it causes nuclear war

David Bennett 9, Associate Editor for Delta Farm Press, “Ug99 — Threat to World’s Wheat”, Delta Farm Press, 4-17, http://www.deltafarmpress.com/wheat/ug99-threat-world-s-wheat

On the destabilizing potential of Ug99…

“There are two things we focus on. Take Ethiopia — 1.5 million hectares of wheat with the average farm size being 1 hectare. Most of those 1.5 million farmers exist on $1 per day, or less, of family income. If their wheat crops fail, the elderly and babies will be dying. That’s the first concern: the humanitarian costs.

“Many people — although not your readers, I suspect — believe there are years’ worth of wheat and other commodities in storage. When you tell them it’s actually only a couple of months, they ask, ‘How the hell did we get into this situation?’

“It’s a delicate balance we’re involved with here. A major disease that hits yield would have devastating consequences.

“China is also vulnerable. Eventually derivatives of Ug99 will reach China. China and India combined represent over half the world’s population. China, India and Pakistan are three nuclear powers.

“If India’s government is facing dramatic civil unrest because of escalating wheat prices — or they don’t have the wheat — it is unlikely U.S. or Australian wheat will simply be airlifted over. It could take a year to fill a shortfall by diverting ships.

“And only 10 percent of the world’s wheat crop is traded internationally, anyway. The vast majority of wheat is consumed in-country.”

## UQ

### Food Security UQ---2NC

#### Food security is strong BUT requires maintaining large producers

Ted Nordhaus 21, Founder and Executive Director of the Breakthrough Institute and Co-Author of An Ecomodernist Manifesto, and Dan Blaustein-Rejto, Director of Food and Agriculture at the Breakthrough Institute, Conducted Research with the Environmental Defense Fund, International Center for Tropical Agriculture, and Farmers Market Coalition, “Big Agriculture Is Best”, Foreign Policy, 4/18/2021, https://foreignpolicy.com/2021/04/18/big-agriculture-is-best/

In some ways, it is not surprising that many of the best fed, most food-secure people in the history of the human species are convinced that the food system is broken. Most have never set foot on a farm or, at least, not on the sort of farm that provides the vast majority of food that people in wealthy nations like the United States consume.

In the popular bourgeois imagination, the idealized farm looks something like the ones that sell produce at local farmers markets. But while small farms like these account for close to half of all U.S. farms, they produce less than 10 percent of total output. The largest farms, by contrast, account for about 50 percent of output, relying on simplified production systems and economies of scale to feed a nation of 330 million people, vanishingly few of whom live anywhere near a farm or want to work in agriculture. It is this central role of large, corporate, and industrial-style farms that critics point to as evidence that the food system needs to be transformed.

But U.S. dependence on large farms is not a conspiracy by big corporations. Without question, the U.S. food system has many problems. But persistent misperceptions about it, most especially among affluent consumers, are a function of its spectacular success, not its failure. Any effort to address social and environmental problems associated with food production in the United States will need to first accommodate itself to the reality that, in a modern and affluent economy, the food system could not be anything other than large-scale, intensive, technological, and industrialized.

Not so long ago, farming was the principal occupation of most Americans. More than 70 percent labored in agriculture in 1800. As late as 1900, some 40 percent of the U.S. labor force still worked on farms. Today, that figure is less than 2 percent.

The consolidation of U.S. agriculture has been underway for more than 150 years. First came irrigation and ploughs, then better seeds and fertilizers, and then tractors and pesticides. With each innovation, farmers were able to produce larger harvests with fewer people and work larger plots of land. Better opportunities drew people to cities, where they could get jobs that provided higher wages and, thereby, produced greater economic surplus—that is, profits and ultimately societal wealth. The large-scale migration of labor from farms to cities pushed farmers to invest even more in labor-saving and productivity-enhancing practices and technologies in a virtuous cycle of urbanization, agricultural intensification, and economic growth that is the hallmark of all affluent societies.

It is not a stretch to say that the United States is wealthy today because most of its people work in manufacturing, services, technology, and other sectors of the economy. In this, the country is not alone. No nation has ever succeeded in moving most of its population out of poverty without most of that population leaving agriculture work.

That transition often isn’t easy. Millions of Black Americans made the difficult journey from tenant farming in the South to factory work in the North, where they faced new forms of racism even as they escaped the tyranny of sharecropping. More recently, small farmers have struggled to survive as increasingly high agricultural productivity and falling commodity prices tilted the playing field toward large farms. Rural communities have likewise suffered as dramatic improvements in labor productivity have shrunk employment in agriculture.

But over the long term, the living standards and life opportunities offered in the modern knowledge, service, and manufacturing economies have proved vastly greater than anything possible under the agrarian social and economic arrangements that most Americans over the last two centuries happily abandoned—and that too many Americans today romanticize.

Modern life required not only liberating most Americans from agrarian labor but also the development of a food system capable of getting food from farms to the cities where increasing numbers of Americans lived and worked. A food system that lost much of its harvest to pests and spoilage needed to dramatically cut losses even as its bounty needed to travel farther and farther. For this reason, the rise of modern agriculture is as much a story of railways and highways as combines and tractors, refrigeration and grain elevators as pesticides and fertilizer.

The development and growth of feedlots followed a similar path. As the historian Maureen Ogle recounts in her magnificent history of the beef industry, In Meat We Trust, the first feedlots grew out of the stockyards of Chicago and Kansas City in the late 19th century. The most efficient way to get beef to burgeoning markets in America’s cities was to drive cattle to these new rail centers, where they were finished, slaughtered, and then shipped throughout the country by rail. After World War II, beef production and feedlots expanded massively, driven not so much by corporate greed as by rising demand for beef from the United States’ newly prosperous middle class and by a scarcity of labor as ranch hands returning from the battlefields of Europe and the Pacific chose to pursue better economic opportunities in the postwar economy.

Debates about the social and environmental impacts of America’s food system cannot be disentangled from the basic reality that in a modern industrialized society, most people will live in cities and suburbs and will not work in agriculture. As a result, most food will need to be produced by large farms, with little labor, far away from the people who will consume it.

Many sustainable agriculture advocates tout the recent growth of organic agriculture as proof that an alternative food system is possible. But growing market share vastly overstates how much food is actually produced organically. In reality, organic production accounts for little more than 1 percent of total U.S. agricultural land use. Meanwhile, only a bit more than 5 percent of food sales come from organic producers, mostly because organic sales are overwhelmingly concentrated in high-value sectors of the market, namely produce and dairy, and fetch a premium from well-heeled consumers.

#### Food supply is stable and prices are trending down

Dan Charles 20, NPR's Food and Agriculture Correspondent, Graduated Magna Cum Laude from American University with a Degree in Economics and International Affairs, “Food Is Growing More Plentiful, So Why Do People Keep Warning Of Shortages?”, NPR, 8/4/2020, https://www.npr.org/2020/08/04/897804434/food-is-growing-more-plentiful-so-why-do-people-keep-warning-of-shortages

There's a common warning about our planet's future: the risk of food shortages.

"We've got a growing world and a hungry world. We need to make sure we do our part in helping feed that hungry world," said Kip Tom, a farmer from Indiana who's currently the U.S. ambassador to the UN's Food and Agriculture Organization, as he closed a panel discussion in 2018.

"That is totally the mantra," says Catherine Kling, an economist at Cornell University. "I'll bet I've been to 50 talks in the last five, 10 years where the beginning is, 'We have to feed 9 billion people by 2050. This is a crisis situation.' The word 'crisis' gets used regularly."

But, in fact, the long-term trend, for more than a century, has been toward ever more abundant food, and declining prices.

To be sure, every once in a while, it really does seem like a crisis. It certainly did in 2008. Tom Hertel, a economist at Purdue University, remembers it well. "This was right in the thick of the biofuel-driven madness," Hertel says, when government policies drove a surge in demand for corn to make ethanol. Rice and wheat prices were spiking for other reasons.

"People were really panicking," he says. Some economists thought that consumers would always experience chronic food shortages and high prices.

Hertel didn't believe it, though. He and his colleagues have a computer model of long-term trends that drive supply and demand for global food, and their model predicted plenty of food, with lower prices.

"So we wrote this paper, 'Debunking the New Normal,' and it was very unpopular," he recalls. "In fact, we weren't able to publish it!"

Eventually, he did find a journal to publish it. And he turned out to be right. Prices soon came back down.

And in fact, the long-term trend, for more than a century, has been toward ever more abundant food, and declining prices. From 1900 to 2000, Hertel says, the number of people in the world quadrupled, yet food prices at the end of the century were only one-third of their starting level.

"People were really panicking," he says. Some economists thought that consumers would always experience chronic food shortages and high prices.

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### Innovation UQ---2NC

#### Ag innovation’s high---private sector’s key, public funding can’t fill in

Julian M. Alston 20, Distinguished Professor of Agricultural and Resource Economics and Director of the Robert Mondavi Institute at University of California, Davis; and Philip Pardey, Professor of Science and Technology Policy in the Department of Applied Economics, and Director of the University of Minnesota's International Science and Technology Practice and Policy center, May 2020, “INNOVATION, GROWTH AND STRUCTURAL CHANGE IN AMERICAN AGRICULTURE,” https://www.nber.org/system/files/working\_papers/w27206/w27206.pdf

Government policy has been a central theme in our discussion of agricultural innovation because the government plays a central role both in contributing directly to the innovation process, as a major provider of agricultural R&D, and in setting the rules of the game that determine the supply of and demand for agricultural innovations. In the current environment for agriculture, demands for private innovation investments are being influenced by government through the prospect of new regulations (or taxes) applied to agricultural production, including technological regulations and environmental regulations to reduce greenhouse gas emissions and other spillovers from agriculture; and through the influence of policy on the supply of inputs (especially labor and water) to agriculture, and on the markets for farm products. A more subtle influence of government is through changing support for public sector R&D (in terms of both the total investment and the balance of investments) influenced by a changing role of scientific evidence in policy and shifting public preferences.29 These shifts create some opportunities for the private sector and foreclose others.

The National Academies of Science, Engineering and Medicine (2019) recently published a new agricultural research agenda for the United States entitled Science Breakthroughs to Advance Food and Agricultural Research by 2030. This report identifies innovative, emerging scientific advances for making the U.S. agricultural and food system more efficient, resilient, and sustainable. The report presents five priorities:

1. Increasing understanding of the animal, soil, and plant microbiomes and their broader applications across the food system.

2. Harnessing the potential of genomics and precision breeding to improve plant and animal traits.

3. Capitalizing on agri-food informatics to enable advanced analytics using data sciences, information technology, and artificial intelligence

4. Employing existing sensors and developing new sensing technologies to enable rapid detection and monitoring

5. Prioritizing transdisciplinary science and systems approaches.

A fundamental motivation for this effort was a concern over the shrinking total support for public agricultural R&D in the United States and the loss of direction in terms of the focus of the shrinking public funds. Among these five priorities, most of the topics entail significant opportunities for private entrepreneurial activity to generate proprietary research products. Notably, three of the five are predominantly digital, data-intensive systems.

8. Conclusion

U.S. agriculture was transformed during the 20th century by waves of innovation with mechanical, biological, chemical, and information technologies. Compared with a few decades ago, today’s agriculture is much less labor intensive and farms are much larger and more specialized, supplying a much-evolved market for farm products. Over recent decades, the global landscape for agricultural R&D has shifted away from farms, away from the public sector towards the private sector, and away from the United States towards agriculturally important middle-income countries, especially China, India and Brazil. Investments are stalling even though meta-evidence shows that past U.S. investments in R&D have yielded very favorable returns: median reported benefit cost-ratios in the range of 12:1. Sustained U.S. investment and innovation will be required to preserve past productivity gains in the face of climate change, coevolving pests and diseases, and changing technological regulations—let alone increase productivity. Great potential exists for innovation in crop and livestock genetics and digital farming technologies to generate new products and production processes, but innovators have to overcome increasingly strong headwinds from social and political forces that seek to dictate technology choices.

### Exports UQ---2NC

#### Ag exports are booming and U.S. competitiveness is high

Keith Good 21, social media manager for the farmdoc project at the University of Illinois, previously worked for the USDA’s National Agricultural Statistics Service, graduate of Purdue University (M.S.- Agricultural Economics), and Southern Illinois University School of Law, 6/30/21, “U.S. Agricultural Exports at Record Level in First Four Months of 2021,” https://farmpolicynews.illinois.edu/2021/06/u-s-agricultural-exports-at-record-level-in-first-four-months-of-2021/

Late last week, the USDA’s Foreign Agricultural Service (FAS) released a report titled, “Early Months Suggest a Bright 2021 for United States Agricultural Exports.”

The FAS report stated that, “U.S. agricultural exports in the first four months (January – April) of 2021 were a record $59 billion, exceeding the previous record set in 2014 by nearly $5 billion.

Robust global demand, high commodity prices, and increased U.S. competitiveness have led to record exports of corn, sorghum, beef, food preparations, and other products.

“Others including soybeans, soybean meal, wheat, and dairy have also seen large increases during recent years and have contributed significantly to early-year export levels. At the current pace, there is a strong possibility of a record-breaking year for U.S. agricultural exports surpassing the 2014 mark of $154.5 billion.”

“Coming out of a strong year in 2020, the United States appears to be well-positioned for an even stronger 2021,” FAS said.

The report explained that, “In the first four months of 2021, exports of top products have met, exceeded, or in some cases greatly exceeded exports from the same period in 2020, contributing to an overall increase of more than $12 billion.”

FAS added that, “Many upward trends from 2020 have continued into the new year. Global demand is rising, driven in part due to record purchases by China as it rebuilds its swine herd from African Swine Fever and demand for animal feed surges. The early 2020 signing of the Phase One agreement between the United States and China created a pathway for U.S. producers to step in and fill both the demand for pork, beef, and poultry products as well as the rising demand for animal feed. Production shortfalls reduced competition from feed exporters in South America, which also had an important effect on trade in the early months of 2021. The combination of increased global demand and reduced supply has led to price increases in the past year that look to benefit U.S. exporters.”

With respect to export destinations, FAS indicated that, “Another notable achievement is that not only are year-to-date exports up across product groups, they are also up across nearly all major U.S. partners. For each of the top 10 markets for U.S. products in 2020 (China, Canada, Mexico, Japan, the European Union, South Korea, Vietnam, Taiwan, the Philippines, Colombia), total exports are higher in January – April 2021 compared to the same period in 2020.”

#### Strong exports will continue due to global economic recovery and a depreciating dollar

Dennis Lynch 21, MA in International Business from West Coast University, author of the Food Export Helpline which has counseled nearly 4,000 U.S. suppliers of food and agricultural products, 9/10/21, “Ask Dennis - September 2021,” https://www.foodexport.org/blog/blogpost/?url=/blog/2021/09/10/ask-dennis-september-2021

Q: I have read in multiple places via Food Export content (blogs, eBulletin, newsletter articles, webinars, etc.) that 2021 will be another record year for food and agricultural exports, better than 2020 which was an all-time high. My concern is that we have peaked now and wonder what to expect next year when economies start to normalize. What do you think?

A: A good, very timely question, I think there are a few things to unpack here. The first is that on August 26th, 2021, USDA’s Economic Research Service and Foreign Agricultural Service published their “Situation and Outlook Report”. In it they said that U.S. agricultural exports in fiscal year (FY) 2022 are forecast to reach $177.5 billion, which is an increase of $4 billion more than in the revised forecast for the preceding year. A fiscal year runs from October 1st through September 30th of the following year. By the time you read this we may be in or nearly in FY ’22 already.

The FY 2021 export forecast of $173.5 billion represents an increase of $9.5 billion from May’s projection, mainly due to higher livestock, poultry, and dairy exports, as well as the adoption of a new definition of “Agricultural Products.” Because of that new definition, which really means products that were not considered “agricultural” now are there has been a re-calculation all the way back statistically. FY 2021 will indeed be a record high, and the forecast is for FY ’22 to surpass that total, which remains to be seen.

But as it turns out, 2020 was not the all-time record we thought it was. The highest amount based on the new tabulation was in 2014 when the dollar was quite a bit weaker and U.S. products more affordable, totaling $154.5 billion. The 2020 total has been adjusted to $149.7 billion. And to keep you up to date the July 2021 year to days (YTD) data was just released and it is now nearly $100 billion already at $99.8 billion, growth of 28% over the same period in 2020. The top 11 markets are all in high double-digit growth, such as China at a staggering 119%, except for the Netherlands which has growth normally seen as very strong at 6%. As recently as 2009 the annual total was only $100.7 billion so it shows you how far we have come, now reaching that in July with five months still to count.

Big Changes in 2021

The ERS reports that beginning with this August 2021 release, the report is adopting the World Trade Organization’s (WTO) definition of “Agricultural Products,” which adds ethanol, distilled spirits, and manufactured tobacco products, among others, while removing rubber and allied products from the previous USDA definition. They said that the net effect of the definitional change on historical values is that U.S. agricultural exports under the new definition averaged $4.7 billion higher per year during FY 2018–2020 from the previous definition, and U.S. agricultural imports averaged $9.9 billion higher annually during the same period.

This is following an earlier move by USDA to change the way it defines "Agricultural Products" when reporting on international trade. Beginning with the release of the January 2021 monthly agricultural trade data product on March 5, 2021, USDA—in coordination with the U.S. Department of Commerce—adopted WTO’s definition, which were formerly three product groups not included in the previous USDA definition. They were counted as “Agricultural & Related Products” or in the case of distilled spirits they were classified as “processed food products”. The change harmonizes USDA’s trade reporting practices with those of the international community and ensures USDA numbers are aligned with those of the Office of the U.S. Trade Representative, which already uses the WTO definition when negotiating WTO binding trade agreements.

The values of new 2021 agricultural products in 2020 were as follows: ethanol, non-beverage $2.2 billion, distilled spirits $1.4 billion, industrial alcohols and fatty acids $459 million, mineral and aerated waters $397 million, dextrins, peptones, and proteins $217 million, manufactured tobacco $212 million, misc. animal products $90 million, live animals $87 million, cotton waste $55 million and misc. plant material $23 million, for a total of $5.2 billion.

Another important change to point out for those using GATS for food export data at www.fas.usda.gov is that effective January 1, 2021; the separation of the United Kingdom (U.K.) from the European Union-27 (EU27) was complete, including trade between both entities. Starting with this August 2021 release, the Outlook for U.S. Agricultural Trade is reporting on EU27 and the U.K. separately, rather than a joint EU27+UK in previous quarters. So, you will not find any U.K. data in the EU 27 aggregate, but you would if you used “Europe”, or “EU-28” which still is available. Or you could isolate the country individually and just select United Kingdom.

Export Growth in FY ’22

The ERS report states that the FY 2022 forecast increase is primarily driven by higher export values for soybeans, cotton, and horticultural products. Soybean exports are projected to increase by $3.3 billion from FY 2021 to a record $32.3 billion on higher prices, which more than offset lower projected volumes. So again, increased bulk commodity revenue is not always reflected in an increase in weight. Cotton exports are forecast up $500 million to $6.8 billion on higher unit values. Horticultural product exports are forecast up $600 million to a record $37.7 billion, led by higher exports of tree nuts.

They added that exports of livestock, poultry, and dairy are forecast up $400 million to $36.8 billion in FY 2022, primarily due to growth in dairy and poultry products. Grain and feed exports are forecast down $1.1 billion from prior forecast levels, primarily due to lower corn export prospects. Agricultural exports to China are forecast at a staggering $39 billion, an increase of $2 billion from FY 2021—largely due to higher expected soybean prices and strong cotton and sorghum demand. China then will remain the largest U.S. market followed by agricultural exports to Canada and Mexico which are forecast at $23.8 billion and $22.3 billion, respectively.

Economic Growth Holds Positive Outlook in 2022

According to the ERS report the primary factor affecting economic activity across the globe is the global pandemic from the Coronavirus. The prevalence of the Delta variant has renewed concerns over pandemic-induced pressure on public health infrastructures, softening consumer spending and global supply chain recovery. For example, as you have likely heard or perhaps experienced, microchip manufacturing and the shipping of physical goods are two aspects of the global economy that continue to observe elevated prices from supply chain disruptions.

Despite these economic challenges, employment statistics and consumer confidence have remained strong, pointing to a continued economic recovery through the end of 2021. World real gross domestic product (GDP) is projected to increase by 5.7% in the remainder of 2021, and subsequently increase by 4.6% in 2022. So, your point about normalizing the economy is well regarded, but it looks as if 2022 will still have higher than average world, and U.S. economic growth.

In fact, growth projections for U.S. real GDP in 2021 were raised to 6.2% from previous estimates of 5.8%. Many economists state that any growth over 2% is considered decent. The U.S. economy has already grown at an annualized rate of 6.4% during the first half of 2021. ERS reported that Q2 output was, however, diminished by drawdowns in private inventories as firms struggled to source goods in the presence of strong consumption demand. Strong demand and low inventories pressured the prices of many goods higher, drawing concerns about inflation.

The report states that the latest July Consumer Price Index (CPI) showed prices increased by a sizable 5.4% over the past 12 months, which was largely due to price increases in used cars and categories aligned with the reopening of the economy. You have probably read about that as well. Those categories showed signs of slowing price growth in July. However, after factoring out some of the more disrupted categories of prices, the report indicates that inflation remains notable.

Prices of shelter, which is the largest component of consumer prices, observed the two highest monthly price increases in June and July since the Bureau of Labor Statistics (BLS) revised how they measured shelter following the 2008 “Great Recession”. Inflation is expected to remain an important consideration going forward, particularly in relation to economic growth. The U.S. economy is forecast to grow in real terms by 4.2% in 2022.

Regional Economic Growth Forecast

Real GDP in North America is expected to grow by a projected 6% in 2021 and 3.9% in 2022. Real GDP forecasts for both Canada and Mexico in 2021 are revised upwards to 6.5% and 5.6%, respectively. The Eurozone economic growth projection is raised from 4.2% to 4.6% for 2021, as vaccination rollout continues to make progress in addition to the further recovery of tourism and the service-sector economy.

Collectively, South American real GDP is projected to grow by 6% in 2021, revised upward from 4.6% in the previous quarter. Argentina is expected to grow by 5.9% in 2021. 2022 cumulative growth expectations in South America are tempered at 3.7%. Across the globe in 2022, GDP growth expectations return to more historically average levels after the large, atypical swing of record decreases in 2020, followed by the rebalancing upswing in growth in 2021.

Despite targeted lockdowns in response to the Delta variant in several cities, China’s 2021 real GDP is expected to grow by 8.1%. Continued domestic and international attention has focused on China’s manufacturing industry, which has seen growth rates slow in recent months due to high input prices. Continued bottlenecks in shipping containers and their ensuing record prices also reduce the growth potential of further goods demand. China’s real GDP growth for 2022 is forecast to grow by 5.7%. Japan’s real GDP growth for 2021 is revised downwards to 2.6% from 3% previously, mainly due to continued economic disruption from COVID-19. Japan’s economy shrank by 4.8% during the first quarter of this year due to the pandemic. South Korea’s real GDP growth is revised upwards from 3.6% to 3.9% in 2021 and is forecast to expand by a further 2.9% in 2022.

Oil and Money

The Forecast reports that many economic sectors are still in the process of establishing a new footing after the substantial shocks and changes from the pandemic. Commodity price increases have subsided, but many remain at elevated levels. Crude oil prices continue to exceed pre-pandemic levels, though the near-term outlook remains uncertain. The Organization of the Petroleum Exporting Countries’ (OPEC) and Russia’s supply management—along with the slow recovery of U.S. oil and gas production—has created uncertainty around supply levels. Demand is still returning strong, but with increased uncertainty due to variants creating new possible drawbacks for consumer behavior and travel demand.

Higher commodity prices such as bulk foods, as well as low interest rates across central banks, are expected to continue to support inflationary pressures. Monetary policy will continue to be closely monitored around the world, as multiple central banks have already begun to adjust rates higher. Interest rates for U.S. government debt are expected to remain low, but above those observed in other advanced economies. The relatively higher rates are expected to help support the U.S. dollar during the rest of 2021, though the U.S. agricultural exports weighted dollar is anticipated to depreciate on average by 2.4% in 2021. The annual average depreciation is due in large part to weakness of the dollar at the start of 2021. This should aid food exports even more since like back in 2014 they are much more competitively priced when they don’t cost as much.

So, it appears the answer to your question is that indeed a “peak” may have happened but the descent back into normalcy, if we can call it that, will be slowed by the strength of the recovery and the durability of the virus in all its strains as well. This is a good time to enter into the food export business to be sure, and a very poor choice to back away from it. This is especially true with global economic recovery, which is clear, but also a depreciating dollar. This tends to raise oil prices a bit but many oil producing nations are among our best customers in food, and also makes us much more competitive globally.

## Small Farms Bad Links

### No Upside---1NC

#### Small farms produce zero environmental benefits

J.B. Ruhl 2, the Joseph Story Professor of Law, Florida State University College of Law, 2002, “AGRICULTURE AND THE ENVIRONMENT: THREE MYTHS, THREE THEMES, THREE DIRECTIONS,” Environs, 25(2), pp. 101-107

Next in line in the arsenal of farm lobby myths is the conception that all "small" farms are good farms in every respect. Again, our government has bought into this myth with all its might.' In the environmental context, it is used to deflect attention to the large "industrial" farms which, for primarily structural and economic reasons, have become the enemy of smaller farm interests.

Small farms may represent many positive cultural and economic ideals, but I have yet to find any empirical evidence that "smallness" is universally, even generally, indeed even sometimes, an environmental virtue in farming. The vast majority of farms are family owned and small in terms of size and revenue; hence, if farming has become a leading polluter in our nation, how can small farms not be part of the cause? More to the point, except in some contexts, such as concentration of livestock feeding, scale does not matter in this issue. The impact on water supply of 100 farms each irrigating 100 acres is the same as one farm irrigating the same 10,000 acres. The same economic incentives that might lead the small farmers to conserve water use will operate on the larger scale. The same holds true for pesticide use, fertilizer use, flushing of salts through drain tiles, and so on. Indeed, if we might expect anything a priori, it would be that economies of scale might work in favor of greater efficiency in use of chemicals and resources as farms grow larger.

### Small Farms Bad---1NC

#### Transitioning to small farming causes devasting land conversion AND worse fill-in abroad---turns the case

Ted Nordhaus 21, Founder and Executive Director of the Breakthrough Institute and Co-Author of An Ecomodernist Manifesto, and Dan Blaustein-Rejto, Director of Food and Agriculture at the Breakthrough Institute, Conducted Research with the Environmental Defense Fund, International Center for Tropical Agriculture, and Farmers Market Coalition, “Big Agriculture Is Best”, Foreign Policy, 4/18/2021, https://foreignpolicy.com/2021/04/18/big-agriculture-is-best/

Moreover, organic farms, large and small, don’t actually outperform large conventional farms by many important environmental measures. Scale, technology, and productivity make good environmental sense and economic sense. Because organic farming requires more land for every calorie or pound produced, a large-scale shift to organic farming would entail converting more forest and other land to farming, resulting in greater habitat loss and more greenhouse gas emissions. And while organic farming doesn’t use synthetic pesticides or fertilizers, it often results in greater nitrogen pollution because manure is a highly inefficient way to deliver nutrients to crops.

Another benefit of large-scale U.S. farms is that because they are so efficient, economically and environmentally, they are also able to produce vastly more food than Americans can consume, making the country the world’s largest agricultural exporter as well.

That benefits the U.S. economy, of course, but it also comes with an environmental benefit for the world. In the contemporary environmental imagination, highly productive, globally traded agriculture is a bad thing—poisoning the land at home and undermining food sovereignty abroad. But in reality, a pound of grain or beef exported from the United States almost always displaces a pound that would have been produced with more land and greenhouse gas emissions somewhere else.

### Small Farms Bad---2NC

#### Small farms are bad—they either cause famine or destroy the environment.

Mark Lynas 17, British author, journalist and environmental activist who focuses on climate change. He is a contributor to New Statesman, The Ecologist, Granta and Geographical magazines, and The Guardian and The Observer newspapers, 11-22-2017, "Organic farming can feed the world — until you read the small print," Alliance for Science, https://allianceforscience.cornell.edu/blog/2017/11/organic-farming-can-feed-the-world-until-you-read-the-small-print/

A Europe-based research team made headlines last week with its conclusion that organic farming can feed the world after all. However, few people took the time to read the small print in their paper, which shows that the researchers’ conclusion depends on several highly questionable assumptions. “A worldwide conversion to organic farming can contribute to a comprehensive and sustainable food system, if combined with further measures,” read the lead of the press release issued by the Research Institute of Organic Agriculture, whose staffers led by Adrian Mueller made up most of the co-authors of the accompanying paper, Strategies for feeding the world more sustainably with organic agriculture. Mueller et al. use a food systems computer model to assess the environmental impacts of a theoretical conversion of world agriculture to 100 percent organic. This shows, based on estimates culled from the existing scientific literature, that global organic conversion would lead to a 16-33 percent increase in land use, with a corresponding 8-15 percent increase in worldwide deforestation. So how do the authors achieve their headline conclusion? By combining a worldwide conversion to organic agriculture with a heroic parallel worldwide conversion to vegetarianism, allowing them to assume (in some scenarios) a 100 percent reduction in land-area competition from animal production. This is combined with a similarly heroic 50 percent reduction in global food waste. The flaws in this logic are readily apparent. It is like arguing that smoking is good for your health if you reduce your exposure to other carcinogens sufficiently to offset the higher chance of cigarettes giving you lung cancer. Well, OK, but wouldn’t it be better to not smoke and also avoid the other carcinogens too? In other words, what the researchers actually show is that 100 percent conversion to organic can only feed the world if two frankly impossible other conditions are met. That gives a very different headline from the one they chose to lead their study with. The problem is that however desirable vegetarianism might be both environmentally and for human health, global consumption of animal products is going up not down as developing countries achieve higher standards of living. And the food waste issue is incredibly complex and intractable. Just think how much food each one of us throws away and why. A better option would surely be to retain the yield and land-use improvements of conventional agriculture, and combine these with efforts to reduce waste and increase vegetarian diets in order to spare even more land for nature. With habitat loss being the major cause of biodiversity declines, this is surely the most environmentally-friendly approach. But the Mueller et al. paper carries another potentially even more fatal flaw, one that the authors do not sufficiently address. Most of the literature on which their model is based assumes the continued existence of what I call laundered nitrogen, which seriously biases existing assessments of organic vs. conventional crop yield gaps. This happens because the vast majority of existing organic crops depend on imported nitrogen laundered from animal manures. This nitrogen is ultimately derived from artificial fertilizers used to grow crops to feed the animals on conventional farms. In a worldwide organic scenario envisioned by the researchers, this would not be possible, so the nitrogen scarcity would be critical. This would lead to worldwide famine. In one of the few attempts to quantify this impact properly, Vaclav Smil concluded that only about half the current world population can be supported without the Haber-Bosch process for artificial nitrogen fixation. Mueller et al. do show a substantial nitrogen deficit for a 100 percent organic planet, but argue that this is a good thing because it reduces greenhouse gases and pollution of water systems. A similar challenge applies for synthetic pesticides, which are noisily avoided in organic farming. To my knowledge, none of the published studies account for the halo effect of existing synthetic pesticide use, which helps protect neighboring organic farms from severe pest outbreaks by area-wide suppression of pest populations. The same goes for diseases. Currently the biggest threat to global harvests is probably wheat rust, a devastating fungal disease of wheat. Rust is now controlled by the application of fungicides. Without these chemicals huge outbreaks of rust would likely occur, and the spores would travel great distances on the winds, quickly affecting harvests globally. Organic farmers can use non-synthetic pesticides such as copper and sulphur-based compounds (which can, in fact, be more toxic than their synthetic alternatives, though that’s a different story), but these products would struggle to prevent worldwide food shortages. As with nitrogen, most existing assessments of organic farming productivity, as the Australian agricultural scientist David Connor has written, “confuse yield of individual crops with that of production systems.” In reality, as Connor argues, a 100 percent organic planet would either mean halving the world’s population or doubling cropland use. Famine or environmental devastation you decide!

#### Small farms don’t avoid any of the issues with industrial ag.

Tamar Haspel 17, writes Unearthed, a monthly commentary in pursuit of a more constructive conversation on divisive food-policy issues, 9-22-2017, "Why Small, Local, Organic Farms Aren’T The Key To Fixing Our Food System," Washington Post, https://www.washingtonpost.com/lifestyle/food/why-small-local-organic-farms-arent-the-key-to-fixing-our-food-system/2017/09/21/146f72b2-9e4d-11e7-8ea1-ed975285475e\_story.html?utm\_term=.138b1884363b

How do we fix it? You've seen the bumper stickers. Buy fresh, buy local. Support the small, diverse, organic (or organic-ish) farm that supplies the farmers market and local restaurants with fresh vegetables. And that's a great idea; local agriculture brings a host of benefits, from delicious strawberries to a much-needed reminder that food has to come from somewhere. [We need to feed a growing planet. Vegetables aren’t the answer.] But it cannot fix that chemical-intensive system that crowds out biodiversity, depletes the soil, pollutes the water, etc. And that's not a lack of confidence in, or enthusiasm for, that kind of small farm. It's simply a recognition that there are economic, logistic, topographical and even arithmetic reasons that those farms can only be a small slice of a reimagined, responsible, food system. There are at least four reasons: They don't grow the right stuff. The crops these farms grow are fruits and vegetables, and, even if we all eat a produce-rich diet, fruits and vegetables cannot be more than a sliver of our agricultural system. The United States has about 400 million acres of cropland, and only about 4 percent of it is fruits and vegetables (what the USDA calls "specialty crops"). I know I'm repeating myself here, but if we all ate the recommended servings of produce, we might double that acreage. However, there is no realistic scenario under which produce is more than 10 percent of cropland. And 10 percent cannot be the solution. They can't grow the right stuff. The reason small, local, diverse farms grow vegetables (and sometimes livestock) is that those are high-margin products. The crops that carpet the vast swaths of the Midwest cannot be successfully grown small and local, because you need economies of scale to make those crops profitable. What's great about staple crops such as oats, lentils, barley and, yes, corn and soy is that they produce huge amounts of nutritious, affordable food per acre. (Of course, when you turn them into processed foods and ethanol and animal feed, you lose some of those advantages.) It's hard to grow grains and legumes at small scale because you would have to charge way too much for them to keep your farm afloat, and one of the chief virtues of those crops is that they're affordable. The land is in the wrong place. Look at a chart where the cropland is and where the people are. They don't match. Take the Northeast (from Maine to the District): It's got 3 percent of the cropland but 20 percent of the population. By contrast, the northern plains (the Dakotas, Kansas and Nebraska) have 24 percent of the land but 2 percent of the population. It's not just that the land is inequitably distributed. There's an inherent problem in trying to grow food near the people who eat it. The more concentrated the population center is, the more expensive the land tends to be. Even if large tracts were available for growing food, they would often be prohibitively expensive. Seasons. In most parts of the country, local food is available only for a limited season. This is not just a problem with an image of American agriculture as a patchwork of small local farms; it's one of the key reasons that the crops grown on the large farms — the grains and legumes — are, as they always have been, the backbone of the human diet. They are storable. Harvest in September, eat in June — or the next June, or even the one after that.

#### Per unit small farms pollute more—so either people starve or the environment suffers.

Henry I. Miller 17, was the Robert Wesson Fellow in Scientific Philosophy and Public Policy at the Hoover Institution. , 5-4-2017, "How College Students Are Being Misled About ‘Sustainable’ Agriculture," National Review, https://www.nationalreview.com/2017/05/organic-farming-not-sustainable/

The organic movement touts the sustainability of its methods, but the claims do not withstand scrutiny. For example, a study published in Hydrology and Earth System Sciences found that the potential for groundwater contamination can be dramatically reduced if fertilizers are distributed through the irrigation system according to plant demand during the growing season. But organic farming depends on compost, the release of which is not matched with plant demand. The study found that “intensive organic agriculture relying on solid organic matter, such as composted manure that is implemented in the soil prior to planting as the sole fertilizer, resulted in significant down-leaching of nitrate” into groundwater. With many of the world’s most fertile farming regions in the throes of drought and aquifer depletion — which was the subject of a 60 Minutes segment — increased nitrate in groundwater is hardly a mark of sustainability. Moreover, although composting gets good PR as a “green” activity, on a large scale it generates a significant amount of greenhouse gases (and is also often a source of pathogenic bacteria applied to crops). Organic farming might work well for certain local environments on a small scale, but it is hugely wasteful of arable land and water because of its low yields. Organic farms produce far less food per unit of land and water than conventional ones. Plant pathologist Dr. Steve Savage analyzed the data from the U.S. Department of Agriculture’s 2014 Organic Survey, which reports various measures of productivity from most of the certified organic farms in the nation, and compared them to those at conventional farms, crop by crop, state by state. His findings are extraordinary. Of the 68 crops surveyed, there was a “yield gap” — poorer performance of organic farms — in 59. And many of those gaps, or shortfalls, were impressive: strawberries, 61 percent less than conventional; fresh tomatoes, 61 percent less; tangerines, 58 percent less; carrots, 49 percent less; cotton, 45 percent less; rice, 39 percent less; peanuts, 37 percent less. These findings are important. As Savage observed: To have raised all U.S. crops as organic in 2014 would have required farming of 109 million more acres of land. That is an area equivalent to all the parkland and wildland areas in the lower 48 states, or 1.8 times as much as all the urban land in the nation. The low yields of organic agriculture impose a variety of stresses on farmland and especially on water consumption. A British meta-analysis published in the Journal of Environmental Management (2012) addressed the question whether organic farming reduces environmental impacts. It identified some of the stresses that were higher in organic, as opposed to conventional, agriculture: “ammonia emissions, nitrogen leaching and nitrous oxide emissions per product unit were higher from organic systems,” as were “land use, eutrophication potential and acidification potential per product unit.” Lower organic crop yields are largely inevitable, given the arbitrary rejection of various advanced methods and technologies. Organic agriculture affords limited pesticide options, difficulties in meeting peak fertilizer demand, and a lack of access to varieties modified with the most precise and predictable techniques of genetic engineering. If the scale of organic production were significantly increased, the lower yields would increase the pressure for the conversion of more land to farming and the burden on water supplies, both of which are serious environmental issues. In short, organic practices are to agriculture what cigarette smoking is to human health. The issue of water conservation, in particular, illustrates an irony in the Stanford ROLLSS program. Consider this from a recent Stanford publication: “Two freshmen particularly active this year [in the ROLLSS program], Raja Ramesh and Kyle Enriquez, have taken it upon themselves to run initiatives encouraging students to conserve water by washing fuller loads of laundry and by taking shorter showers.” Why don’t they, in addition, adopt modern, water-conserving, non-organic farming practices? Organic production disfavors the best approach to enhancing soil quality — the minimization of soil disturbance (e.g., no plowing or tilling), combined with the use of cover crops. Such farming systems offer multiple environmental advantages, particularly with respect to limited erosion, the runoff of fertilizers and pesticides, and the release of CO2 from tilling. Organic growers do frequently plant cover crops, but in the absence of effective herbicides, they often rely on tillage (or even labor-intensive hand-weeding) for weed control. Many who are seduced by the romance of organic farming (read: college students) ignore its human consequences. American farmer Blake Hurst offers this reminder: “Weeds continue to grow, even in polycultures with holistic farming methods, and, without pesticides, hand weeding is the only way to protect a crop.” The back-breaking drudgery of hand weeding often falls to women and children. One prevalent “green myth” about organic agriculture is that it does not employ pesticides. Organic farming does, in fact, use insecticides and fungicides to prevent predation of its crops. More than 20 chemicals (mostly containing copper and sulfur) are commonly used in the growing and processing of organic crops and are acceptable under USDA’s arbitrary organic rules.

#### High yield key

ScienceDaily 18, 9-14-2018, "'High-yield' farming costs the environment less than previously thought," https://www.sciencedaily.com/releases/2018/09/180914154350.htm

Agriculture that appears to be more eco-friendly but uses more land may actually have greater environmental costs per unit of food than "high-yield" farming that uses less land, a new study has found. There is mounting evidence that the best way to meet rising food demand while conserving biodiversity is to wring as much food as sustainably possible from the land we do farm, so that more natural habitats can be "spared the plough." However, this involves intensive farming techniques thought to create disproportionate levels of pollution, water scarcity and soil erosion. Now, a study published today in the journal Nature Sustainability shows this is not necessarily the case. Scientists have put together measures for some of the major "externalities" -- such as greenhouse gas emission, fertiliser and water use -- generated by high- and low-yield farming systems, and compared the environmental costs of producing a given amount of food in different ways. Previous research compared these costs by land area. As high-yield farming needs less land to produce the same quantity of food, the study's authors say this approach overestimates its environmental impact. Their results from four major agricultural sectors suggest that, contrary to many people's perceptions, more intensive agriculture that uses less land may also produce fewer pollutants, cause less soil loss and consume less water. However, the team behind the study, led by scientists from the University of Cambridge, caution that if higher yields are simply used to increase profit or lower prices, they will only accelerate the extinction crisis we are already seeing. "Agriculture is the most significant cause of biodiversity loss on the planet," said study lead author Andrew Balmford, Professor of Conservation Science from Cambridge's Department of Zoology. "Habitats are continuing to be cleared to make way for farmland, leaving ever less space for wildlife." "Our results suggest that high-yield farming could be harnessed to meet the growing demand for food without destroying more of the natural world. However, if we are to avert mass extinction it is vital that land-efficient agriculture is linked to more wilderness being spared the plough." The Cambridge scientists conducted the study with a research team from 17 organisations across the UK and around the globe, including colleagues from Poland, Brazil, Australia, Mexico and Colombia. The study analysed information from hundreds of investigations into four vast food sectors, accounting for large percentages of the global output for each product: Asian paddy rice (90%), European wheat (33%), Latin American beef (23%), and European dairy (53%). Examples of high-yield strategies include enhanced pasture systems and livestock breeds in beef production, use of chemical fertilizer on crops, and keeping dairy cows indoors for longer. The scientists found data to be limited, and say more research is urgently needed on the environmental cost of different farming systems. Nevertheless, results suggest many high-yield systems are less ecologically damaging and, crucially, use much less land. For example, in field trials, inorganic nitrogen boosted yields with little to no greenhouse gas "penalty" and lower water use per tonne of rice. Per tonne of beef, the team found greenhouse gas emissions could be halved in some systems where yields are boosted by adding trees to provide shade and forage for cattle. The study only looked at organic farming in the European dairy sector, but found that -- for the same amount of milk -- organic systems caused at least one third more soil loss, and take up twice as much land, as conventional dairy farming. Co-author Professor Phil Garnsworthy from the University of Nottingham, who led the dairy team, said: "Across all dairy systems we find that higher milk yield per unit of land generally leads to greater biological and economic efficiency of production. Dairy farmers should welcome the news that more efficient systems have lower environmental impact." Conservation expert and co-author Dr David Edwards, from the University of Sheffield, said: "Organic systems are often considered to be far more environmentally friendly than conventional farming, but our work suggested the opposite. By using more land to produce the same yield, organic may ultimately accrue larger environmental costs." The study authors say that high-yield farming must be combined with mechanisms that limit agricultural expansion if they are to have any environmental benefit. These could include strict land-use zoning and restructured rural subsidies. "These results add to the evidence that sparing natural habitats by using high-yield farming to produce food is the least bad way forward," added Balmford. "Where agriculture is heavily subsidised, public payments could be contingent on higher food yields from land already being farmed, while other land is taken out of production and restored as natural habitat, for wildlife and carbon or floodwater storage."

### Small Farms Bad---Tech

#### Industrial-scale production unlocks precision farming---empirics prove that’s the best way to cut pollution---turns every environment impact

Dan Blaustein-Rejto 18, Director of the Food and Agriculture Program at the Breakthrough Institute, Masters of Public Policy from University of California, Berkeley, BA in Environmental Studies from Brown University, “Eating Environmentally Requires Embracing Technology and Industry”, The Breakthrough Institute, 5/1/2018, https://thebreakthrough.org/issues/food/eating-environmentally-requires-embracing-technology-and-industry

Since then, thought leaders such as writer Michael Pollan and chef Alice Waters have carried the torch forward, diagnosing the ills of our food system. US agriculture generates as much greenhouse gas as all of Britain. Excess farm nutrients pollute rivers, lakes, and coastal areas such as the Gulf of Mexico to the point that fish can’t survive. And pesticide use harms farmworkers, children, and wildlife.

The solutions, according to many advocates, lie in cutting back on modern indulgences and supporting alternatives to the conventional food system. These include buying food from local farmers, shopping organic, eating less meat or at least eating free-range meat, and avoiding processed foods. One of the most well-known rules of thumb in this school of thought is, as Pollan writes, to eat only what your great-grandmother would recognize as food.

While these recommendations have merit, and certainly intuitive appeal for many, the reality of sustainability is far more complicated. For instance, locally produced food often has a greater environmental footprint than imported food. Organic farming typically requires more land use and contributes more to nutrient pollution of water bodies. Most free-range beef emits substantially more greenhouse gas emissions than beef from a feedlot, or factory farm as it’s commonly called. And many types of food processing have reduced food waste by increasing shelf life — just think of how long a bag of frozen fruit or loaf of sliced bread lasts.

Recent research into sustainable agriculture has given rise to a new paradigm. I call it Ecomodern Eating. Ecomodern Eating challenges many widespread assumptions, highlighting the importance of agricultural productivity and innovation in building an eco-friendly and delicious food future.

Historically, increasing agricultural productivity has been key to growing more environmentally friendly food. Advances in livestock production, such as nutritionally-optimized feed, have enabled North American chicken, beef, and dairy producers to emit less greenhouse gas emissions per pound of meat, eggs, or milk produced than most other regions in the world.

The same is true in crop production: the high levels of productivity and efficiency often derisively likened to industrial production has enabled North American crop production to emit less greenhouse gases per unit calorie than any other part of the world.

Agricultural productivity continues to advance and drive sustainability forward. A suite of new “precision agriculture” technologies such as GPS-driven tractors and drone imagery enable farmers to grow more food while using less fertilizer and pesticides. And advances in indoor farming are enabling companies like Plenty and AeroFarms to grow many times more food than traditional farms while using a fraction of the water and land.

In addition, we also need substitutes for foods with the largest environmental footprints. Many of the greatest environmental successes of the past have involved finding replacements for ecologically harmful practices. For instance, when wild sturgeon were on the precipice of extinction, the caviar industry found ways to raise and harvest farmed fish instead. And today, plant-based and cultured meat start-ups are developing hamburgers, fish, and other animal products that taste like the original thing, but with fewer of some important environmental impacts (especially compared to beef).

#### It's net-offense---productivity is the biggest variable for conservation AND trends solve their internal link

Alex Smith 20, Food and Agriculture Analyst at the Breakthrough Institute, MA/MSc in International and World History from Columbia University and the London School of Economics and Political Science, “To Combat Pandemics, Intensify Agriculture”, The Breakthrough Institute, 4/13/2020, https://thebreakthrough.org/issues/food/zoonosis

Alongside reducing deforestation and land-use change and improving food access and security, sustainably intensifying agriculture across the globe would benefit biodiversity by protecting habitats and keeping them from agricultural development. While monoculture means less biodiversity on farmland, the productivity gains of monocropping — and other intensive agricultural practices — allow for the sparing of far greater land that can be used as habitat for wild flora and fauna. Certainly, agricultural intensification alone is not enough to maximize land-sparing benefits, as improved conservation and land policy is needed to minimize rebound effects. But greater productivity is likely the longest lever for achieving ambitious conservation goals.

The spread of intensive agriculture has come with rising nitrogen run-off, methane emissions, and other environmental impacts. These are real problems, but their solution is the continued improvement of intensive systems. In fact, we are already seeing reductions in many environmental impacts from agriculture in countries where intensive agriculture is prevalent, such as the US.

### Small Farms Bad---Land Conversion

#### Downsizing requires massive land expansion AND it’s unique: there’s gradual re-wilding because of high-intensity improvements

Ted Nordhaus 15, Founder and Executive Director of the Breakthrough Institute, “The Environmental Case for Industrial Agriculture”, The Breakthrough Institute, 6/8/2015, https://thebreakthrough.org/issues/food/the-environmental-case-for-industrial-agriculture

Debates about specific agricultural technologies and environmental impacts often lose sigh of the forest through the trees in terms of the relationship between food production and the environment. Low-productivity food systems have devastating impacts on the environment. As much as three-quarters of all deforestation globally occurred prior to the Industrial Revolution, almost entirely due to two related uses, clearing land for agriculture and using wood for energy. Indeed, many places that we now think of as vast wilderness were once farmed. Even the Amazon basin, long thought to have been a primeval Eden turns out to have been the site of extensive agriculture prior to the decimation of the pre-Columbian population due to conquest and disease. Today, forests have come back in New England and many other parts of the world not due to disease, privation, or genocide but rather because agricultural productivity has risen so dramatically that many marginal agricultural lands have been abandoned.

Meanwhile, everywhere that people depend upon bushmeat for protein, forests and other habitat continue to be defaunated. Moreover, low-intensity pasturing of livestock represents the largest single human land use, larger even than cropland. When leading public intellectuals and chefs like Michael Pollan and Alice Waters decry feedlot meat and rhapsodize about the culinary and environmental benefits of grass-fed beef, what they are really proposing is a vast expansion of human impacts on the land.

Even with much lower levels of per-capita beef consumption, there is no way that American beef consumption, much less global consumption, could be met with pastured beef without dedicating much more land to pasture. Even accounting for the immense amount of grain needed to feed cattle, feedlot beef is more land efficient than grass-fed.

In short, were such a thing even possible, attempting to feed a world of seven-going-on-nine billion people with a preindustrial food system would almost certainly result in a massive expansion of human impacts through accelerated conversion of forests, grasslands, and other habitat to cropland and pasture.

#### It’s the single largest cause of biodiversity loss

Dr. Angela Logomasini 12, Senior Fellow at the Competitive Enterprise Institute, Ph.D. in American Government from The Catholic University of America, “Rachel Was Wrong: Agrochemicals’ Benefits to Human Health and the Environment”, Competitive Enterprise Institute, Issue Analysis, Number 8, November 2012, <https://cei.org/sites/default/files/Angela%20Logomasini%20-%20Rachel%20Was%20Wrong.pdf>

Environmental Conservation Benefits

While many environmental advocacy groups suggest that chemicals have tremendously adverse impacts on the environment and wildlife, the fact is that these products have substantial environmental benefits. We consider a few here, such as the impacts on habitats and water quality.

Researcher Roger Sedjo of Resources for the Future notes: “Almost certainly the primary cause of contemporary biodiversity decline is habitat destruction and the degradation that results from the expansion of human populations and activities.”40 Clearing land for agriculture is surely one of those human activities, as is clearing land for living space.

Many people assume that any deforestation is bad. They forget that deforestation has made it possible for developed nations to provide an abundant food supply for domestic and international markets. As populations grow and people switch from gathering food to farming, some deforestation becomes necessary. History shows that once enough agricultural land is set aside and farming practices become sustainable, forests stabilize.

Steven Hayward of the Ashbrook Center at Ashland University documents such trends in his Environmental Almanac 2011, showing how deforestation has declined in recent years in many parts of the world and in some cases reforestation has begun. He notes:

Although data on the global scale are inconsistent and incomplete, the rate of deforestation appears to be steadily declining. Between 1995 and 2005, Asia dramatically reversed its deforestation trends; it is now reforesting rapidly. Africa and South America still experience the highest rates of deforestation.

Brazil, which along with Indonesia had the highest net loss of forests in the 1990s, has significantly reduced its rate of loss. Recent data suggest that Indonesia’s rate of deforestation is also slowing.41

Such reforestation would not be possible without high-yield agriculture and the chemicals that are part of that process.

From a conservationist perspective, the problem is not deforestation and habitat destruction, per se, but mismanagement of resources. This is true for both the developed and developing world. A large part of the problem stems from the tragedy of the commons—the fact that much of the world’s forests are owned by central governments that do not exercise any management or control over the lands. As a result, much of the forests are an open resource lacking a steward, which leads to serious abuse as everyone takes from the forest, yet no one has an interest in maintaining the resource. In addition poverty contributes as clearing more and more land for agriculture becomes necessary to produce food.

There is much debate as to the extent of rainforest deforestation. It is clear that high-yield farming helps reduce encroachment into wildlife habitat, and the measured impact is substantial. If farmers continued to use 1950s technology—when most of the world did not use pesticides and fertilizers— they would have to plant 10 million square miles of additional land to generate the food that is produced today, notes researcher Dennis Avery of the Hudson Institute.42 That is more land than all of North America (about 9.4 million square miles) and almost as much as all the land in Africa (about 11.7 million square miles). Researcher Indur Goklany has also quantified these conservation gains. He explains:

If U.S. agricultural technology had been frozen at 1910 levels— i.e. if cropland per capita had stayed at 1910 levels—then to produce the same output as achieved in 2004, U.S. farmers would have had to utilize 1,007 million acres rather than the 305 million acres that were actually harvested that year. That’s more than four times the total amount of land and habitat under special protection in the U.S. in 1999— including National Parks, National Wildlife Refuges, and National Wilderness Areas. Quite possibly, the increase in land productivity averted a potential catastrophe for U.S. wildlife and perhaps even biodiversity more generally.43

### Small Farms Bad---Land Conversion---Zoonotic Disease

#### Conversion causes zoonotic disease outbreaks

Alex Smith 20, Food and Agriculture Analyst at the Breakthrough Institute, MA/MSc in International and World History from Columbia University and the London School of Economics and Political Science, “To Combat Pandemics, Intensify Agriculture”, The Breakthrough Institute, 4/13/2020, https://thebreakthrough.org/issues/food/zoonosis

There is broad agreement in the epidemiological and virological studies of zoonoses that the most important factor in the development of new zoonotic diseases is land-use change. The development of wild lands, whether caused by agricultural extensification, mining, or other factors, simultaneously shrinks the habitat of wildlife and brings that wildlife in close proximity to human settlements. The combination of shrinking habitats, human-wildlife interactions, and food insecurity is a recipe for zoonosis. In West Africa, these three factors combined were responsible for HIV/AIDS and the slew of recent Ebola outbreaks.

Even when food insecurity and the consumption of wildlife are taken out of the equation, land-use change is a powerful driver of zoonotic disease, and has resulted in outbreaks of zoonotic diseases like malaria, yellow fever, dengue fever, Nipah virus, West Nile virus, Zika virus, and Lyme disease. Often, these diseases are transmitted from animals to humans through an intermediary, sometimes an insect (mosquitoes or ticks) and sometimes through livestock that live too close to wildlife populations, as was the case with Nipah.

Because the biggest driver of land-use change is agriculture, “intensive” high-yield agriculture often takes the blame, but the alternative — extensive, low-yield farming — would be worse. To prevent further pandemics, we must do as much as we can to stop land-use change while improving food security. We must, in other words, improve agricultural yields, allowing us to grow more food on less land. So, contrary to what many have asserted, a vital lever for limiting land-use change and providing cheap food for all is not to abandon intensive agriculture, but to intensify it further, especially in the developing world where food insecurity is greatest and where growing populations means rising food demand.

It is thanks to rising yields that farmers, globally, produce about three times the amount of crops while only using 13% more land than in 1950. For example, if yields from cereal production hadn’t increased since 1961, the global agricultural footprint would be 24% larger than it is today — increasing from roughly 50% at current levels to 62% of total habitable land — and would likely have resulted in even deadlier zoonotic outbreaks.

#### Extinction

Dennis **Pamlin 15** & Stuart Armstrong. Pamlin, Executive Project Manager Global Risks, Global Challenges Foundation; Stuart Armstrong, James Martin Research Fellow, Future of Humanity Institute, Oxford Martin School, University of Oxford. February 2015. “Global Challenges: 12 Risks that threaten human civilization: The case for a new risk category.” Global Challenges Foundation. https://api.globalchallenges.org/static/wp-content/uploads/12-Risks-with-infinite-impact.pdf

Here only worldwide events are included. A widespread endemic disease that is stable in terms of how many people become sick from it is not a pandemic. 260 3.1.4.1 Expected impact Infectious diseases have been one of the greatest causes of mortality in history. Unlike many other global challenges pandemics have happened recently, as we can see where reasonably good data exist. Plotting historic epidemic fatalities on a log scale reveals that these tend to follow a power law with a small exponent: many plagues have been found to follow a power law with exponent 0.26.261 These kinds of power laws are heavy-tailed262 to a significant degree.263 In consequence most of the fatalities are accounted for by the top few events.264 If this law holds for future pandemics as well,265 then the majority of people who will die from epidemics will likely die from the single largest pandemic. Most epidemic fatalities follow a power law, with some extreme events – such as the Black Death and Spanish Flu – being even more deadly.267 There are other grounds for suspecting that such a high impact epidemic will have a greater probability than usually assumed. All the features of an extremely devastating disease already exist in nature: essentially incurable (Ebola268), nearly always fatal (rabies269), extremely infectious (common cold270), and long incubation periods (HIV271). If a pathogen were to emerge that somehow combined these features (and influenza has demonstrated antigenic shift, the ability to combine features from different viruses272), its death toll would be extreme. Many relevant features of the world have changed considerably, making past comparisons problematic. The modern world has better sanitation and medical research, as well as national and supra-national institutions dedicated to combating diseases. Private insurers are also interested in modelling pandemic risks.273 Set against this is the fact that modern transport and dense human population allow infections to spread much more rapidly274, and there is the potential for urban slums to serve as breeding grounds for disease.275 Unlike events such as nuclear wars, pandemics would not damage the world’s infrastructure, and initial survivors would likely be resistant to the infection. And there would probably be survivors, if only in isolated locations. Hence the risk of a civilisation collapse would come from the ripple effect of the fatalities and the policy responses. These would include political and agricultural disruption as well as economic dislocation and damage to the world’s trade network (including the food trade). Extinction risk is only possible if the aftermath of the epidemic fragments and diminishes human society to the extent that recovery becomes impossible277 before humanity succumbs to other risks (such as climate change or further pandemics).

### Small Farms Bad---Land Conversion---Turns Warming

#### It turns the environment

Dr. Christian Folberth 20, Researcher at the Ecosystem Services and Management Program at the International Institute for Applied Systems Analysis, PhD from the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) and ETH Zurich, BSc in Horticultural Sciences and MSc in Environmental Planning and Engineering Ecology from Technical University of Munich, et al., “The Global Cropland-Sparing Potential of High-Yield Farming”, Nature Sustainability, Volume 3, https://www.nature.com/articles/s41893-020-0505-x

The global expansion of cropland exerts substantial pressure on natural ecosystems and is expected to continue with population growth and affluent demand. Yet earlier studies indicated that crop production could be more than doubled if attainable crop yields were achieved on present cropland. Here we show on the basis of crop modelling that closing current yield gaps by spatially optimizing fertilizer inputs and allocating 16 major crops across global cropland would allow reduction of the cropland area required to maintain present production volumes by nearly 50% of its current extent. Enforcing a scenario abandoning cropland in biodiversity hotspots and uniformly releasing 20% of cropland area for other landscape elements would still enable reducing the cropland requirement by almost 40%. As a co-benefit, greenhouse gas emissions from fertilizer and paddy rice, as well as irrigation water requirements, are likely to decrease with a reduced area of cultivated land, while global fertilizer input requirements remain unchanged. Spared cropland would provide space for substantial carbon sequestration in restored natural vegetation. Only targeted sparing of biodiversity hotspots supports species with small-range habitats, while biodiversity would hardly profit from a maximum land-sparing approach.

**No Industrial Ag Impact---1NC**

#### Farming is rapidly becoming sustainable---all environmental metrics are improving

Michael Shellenberger 20, Founder and President of Environmental Progress, Former President of the Breakthrough Institute, Apocalypse Never: Why Environmental Alarmism Hurts Us All, ISBN: 0063001705,9780063001701

As farms become more productive, grasslands, forests, and wildlife are returning. Globally, the rate of reforestation is catching up to a slowing rate of deforestation.19

Humankind’s use of wood has peaked and could soon decline significantly.20 And humankind’s use of land for agriculture is likely near its peak and capable of declining soon.21 All of this is wonderful news for everyone who cares about achieving universal prosperity and environmental protection.

The key is producing more food on less land. While the amount of land used for agriculture has increased by 8 percent since 1961, the amount of food produced has grown by an astonishing 300 percent.22

Though pastureland and cropland expanded 5 and 16 percent, between 1961 and 2017, the maximum extent of total agriculture land occurred in the 1990s, and declined significantly since then, led by a 4.5 percent drop in pastureland since 2000.23 Between 2000 and 2017, the production of beef and cow’s milk increased by 19 and 38 percent, respectively, even as total land used globally for pasture shrank.24

The replacement of farm animals with machines massively reduced land required for food production. By moving from horses and mules to tractors and combine harvesters, the United States slashed the amount of land required to produce animal feed by an area the size of California. That land savings constituted an astonishing one-quarter of total U.S. land used for agriculture.25

Today, hundreds of millions of horses, cattle, oxen, and other animals are still being used as draft animals for farming in Asia, Africa, and Latin America. Not having to grow food to feed them could free up significant amounts of land for endangered species, just as it did in Europe and North America.

As technology becomes more available, crop yields will continue to rise, even under higher temperatures. Modernized agricultural techniques and inputs could increase rice, wheat, and corn yields five-fold in sub-Saharan Africa, India, and developing nations.26 Experts say sub-Saharan African farms can increase yields by nearly 100 percent by 2050 simply through access to fertilizer, irrigation, and farm machinery.27

If every nation raised its agricultural productivity to the levels of its most successful farmers, global food yields would rise as much as 70 percent.28 If every nation increased the number of crops per year to its full potential, food crop yields could rise another 50 percent.29

Things are headed in the right direction regarding other environmental measures. Water pollution is declining in relative terms, per unit of production, and in absolute terms in some nations. The use of water per unit of agricultural production has been declining as farmers have become more precise in irrigation methods.

High-yield farming produces far less nitrogen pollution run-off than lowyield farming. While rich nations produce 70 percent higher yields than poor nations, they use just 54 percent more nitrogen.30 Nations get better at using nitrogen fertilizer over time. Since the early 1960s, the Netherlands has doubled its yields while using the same amount of fertilizer.31

High-yield farming is also better for soils. Eighty percent of all degraded soils are in poor and developing nations of Asia, Latin America, and Africa. The rate of soil loss is twice as high in developing nations as in developed ones. Thanks to the use of fertilizer, wealthy European nations and the United States have adopted soil conservation and no-till methods, which prevent erosion. In the United States, soil erosion declined 40 percent in just fifteen years, between 1982 and 1997, while yields rose.32

**No Industrial Ag Impact---2NC**

#### Sustainability is increasing

Alison McGrew 20, Writer for Illinois Farm Families, “3 Myths About Sustainable Agriculture”, March 2020, https://www.watchusgrow.org/2020/03/02/3-myths-about-sustainable-agriculture/

Myth #1: Today’s farms are less sustainable than they used to be.

Fact: Simply put, farmers today are doing more with less. Here are a few examples:

* Compared to 1977, today’s beef farmers produce the same amount of beef with 33% fewer cattle.
* Pig farms now use 75.9% less land than in 1960.
* Over the last 40 years, soybean farmers have nearly doubled how much they grow while using 8% less energy.
* Dairy farmers have reduced greenhouse gas (GHG) emissions by 63% over the past 60 years.
* Corn farmers have increased yields while reducing pesticide and fertilizer use, thanks in part to biotechnology.

Sustainable agriculture may look different on each farm, but the goal is always the same: make the farm better for tomorrow and for future generations while providing a safe, sustainable food supply.

#### Every output is improving

Ted Nordhaus 15, Founder and Executive Director of the Breakthrough Institute and Co-Author of An Ecomodernist Manifesto, Michael Shellenberger, Founder and President of Environmental Progress, Former President of the Breakthrough Institute, and Linus Blomqvist, PhD Student in Environmental Economics and Science at UC Santa Barbara, Former Director of the Conservation and Food & Agriculture programs at the Breakthrough Institute, “George Monbiot is Wrong to Suggest Small Farms Are Best for Humans and Nature”, The Guardian, 9/25/2015, https://www.theguardian.com/environment/2015/sep/25/george-monbiot-is-wrong-to-suggest-small-farms-are-best-for-humans-and-nature

Without question, the journey from subsistence economies to modern livelihoods is not an easy one and moving from the farm to the city does not guarantee a better life, at least in the short term. But the last two centuries offer ample evidence that by just about every metric of human health, freedom, and material well-being, urbanisation, industrialisation, and agricultural modernisation are processes that have been overwhelmingly positive for humans.

Moreover, as a leading proponent of rewilding, we hope that Monbiot will think a bit harder about where all those rewilded landscapes in which, he hopes “nature is allowed to do its own thing, in which it can be to some extent self-willed, driven by its own dynamic processes” are likely to come from. On a planet of 7, going on 9 billion people, agricultural modernisation and intensification are clearly the most plausible path to leaving more of the Earth to nature.

### Industrial Ag Good---Epistemology

#### The most rigorous studies using diverse data sets proves the turn---their evidence is systematically biased

Andrew Balmford 18, Professor of Conservation Science at the University of Cambridge, Former Research Fellow at the Institute of Zoology, Fellow of Clare College and Fellow at the Royal Society, et al., “The Environmental Costs and Benefits of High-Yield Farming”, Nature Sustainability, Volume 1, https://www.nature.com/articles/s41893-018-0138-5

How we manage farming and food systems to meet rising demand is pivotal to the future of biodiversity. Extensive field data suggest that impacts on wild populations would be greatly reduced through boosting yields on existing farmland so as to spare remaining natural habitats. High-yield farming raises other concerns because expressed per unit area it can generate high levels of externalities such as greenhouse gas emissions and nutrient losses. However, such metrics underestimate the overall impacts of lower-yield systems. Here we develop a framework that instead compares externality and land costs per unit production. We apply this framework to diverse data sets that describe the externalities of four major farm sectors and reveal that, rather than involving trade-offs, the externality and land costs of alternative production systems can covary positively: per unit production, land-efficient systems often produce lower externalities. For greenhouse gas emissions, these associations become more strongly positive once forgone sequestration is included. Our conclusions are limited: remarkably few studies report externalities alongside yields; many important externalities and farming systems are inadequately measured; and realizing the environmental benefits of high-yield systems typically requires additional measures to limit farmland expansion. Nevertheless, our results suggest that trade-offs among key cost metrics are not as ubiquitous as sometimes perceived.

Main

Agriculture already covers around 40% of Earth’s ice- and desert-free land and is responsible for around two-thirds of freshwater withdrawals1. Its immense scale means that it is already the largest source of threat to other species2, so how we cope with very marked increases in demand for farm products3,4 will have profound consequences for the future of global biodiversity2,5. On the demand side, cutting food waste and excessive consumption of animal products is essential1,5,6,7,8. In terms of supply, farming at high yields (production per unit area) has considerable potential to restrict humanity’s impacts on biodiversity. Detailed field data from five continents and almost 1,800 species from birds to daisies9,10,11,12,13,14 reveal that so many depend on native vegetation that for most the impacts of agriculture on their populations would be best limited by farming at high yields (production per unit area) alongside sparing large tracts of intact habitat. Provided it can be coupled with setting aside (or restoring) natural habitats15, lowering the land cost of agriculture thus appears central to addressing the extinction crisis2.

However, a key counterargument against this land-sparing approach is that there are many other environmental costs of agriculture besides the biodiversity displaced by the land it requires, such as greenhouse gas (GHG) and ammonia emissions, soil erosion, eutrophication, dispersal of harmful pesticides and freshwater depletion5,7,16,17,18. Measured per unit area of farmland, the production of such externalities is sometimes greater in high- than lower-yield farming systems17,18, potentially weakening the case for land sparing. However, while expressing externalities per unit area can help identify local-scale impacts19, it systematically underestimates the overall impact of lower-yield systems that occupy more land for the same level of production20. To be robust, assessments of externalities also need to include the off-site effects of management practices, such as crop production for supplementary feeding of livestock, or off-farm grazing for manure inputs to organic systems20,21,22.

A novel framework for comparing system-wide costs

Here, we argue that comparisons of the overall impacts of contrasting agricultural systems should focus on the sum of externality generated per unit of production10 (paralleling measures of emissions intensity in climate change analyses). This approach has, for the most part, been adopted only for a relatively narrow set of agricultural products8,23 and farming systems (for example, organic versus conventional, glasshouse versus open-field20,24). Here we develop a more general framework, and apply it to a diversity of data on some major farm sectors, farming systems and environmental externalities. Existing data are limited but nevertheless enable us to explore the utility of this new approach, test for broad patterns and make an informed commentary on their significance for understanding the trade-offs and co-benefits of high- versus lower-yield systems.

## Yield Links

### Yield Link---2NC

#### Large industrial agriculture is vital to sustain yield increases.

Kaitlyn Spangler 20, PhD Candidate and Presidential Doctoral Research Fellow in the Environment and Society Department at Utah State University, et al., 7/21/20, “Past and Current Dynamics of U.S. Agricultural Land Use and Policy,” Frontiers in Sustainable Food Systems, <https://doi.org/10.3389/fsufs.2020.00098>

**TFP = total factor productivity**

In recent decades, U.S. agricultural production has reaped the benefits of industrialization and mechanization to support exponential increases in yield of major crops (Reganold et al., 2011; Aguilar et al., 2015; Pellegrini and Fernández, 2018). Although total land area devoted to agriculture is declining nationally (yet expanding globally, see Ramankutty et al., 2018), crop production is heavily concentrated in certain areas. Larger farms are consolidating, and competition for farmland among farmers is increasing (USDA NASS, 2019b). These large-scale farms are comprising more and more of U.S. cropland and are out-competing smaller operations (Paul et al., 2004; MacDonald and Hoppe, 2017); this consolidation is driven by historical patterns of land dispossession and predominantly White landownership (Dunbar-Ortiz, 2014; Ayazi and Elsheikh, 2015; Horst and Marion, 2019), as well as farmers expanding through part-ownership and operating rented land (Hart, 1991). At the same time, larger farms have brought economies of scale that boost productivity (Paul et al., 2004) and benefit from economies of size that make it profitable to expand farm size per unit of output (Duffy, 2009). Agglomeration of agricultural production around similar land uses and crop types reflects the pressure for farms to consolidate input investments, share information, and overcome the scalar thresholds of market competition.

While biophysical differences and political incentives influence regional specialization of crop production (Hart, 1978, 1986, 2001), county-level dominance of cropland in areas such as the Heartland, Basin and Range, and Mississippi Portal signifies the simplification and intensification of agricultural landscapes. The Corn Belt, originating from a landscape of mixed farming and agricultural experimentation, has become highly specialized for surplus commodity production (Hart, 1986; Hudson, 1994). The location of farms and cropland in the Heartland has remained relatively stable over the past several decades, indicating that the highest quality and most productive agricultural lands have stayed in agriculture throughout the region (Hart, 1986, 1991; Drummond et al., 2012). Other regions across the western U.S. have seen fluctuations in amount and location of cropland due to greater climatic, economic, and technological variability, as well as changing FB policies (Hart, 2001; Drummond et al., 2012). National evidence of productivity growth, particularly in the Midwest, indicate that farm consolidation is a substantial factor in the exponential increase of aggregate TFP, alongside technological innovation (Key, 2019).

Technological advances in seed genomics, fertilizers, chemicals, and mechanization have revolutionized agriculture in the U.S., but they have also introduced complicated ecological consequences. The introduction of herbicide-resistant (HR) genetically engineered crops in 1996 made the broad-spectrum application of glyphosate possible. Glyphosate-resistant HR crops have necessarily increased the application rates of herbicides and pesticides, introducing resistance in weed and insect populations; meanwhile, populations of beneficial species are decreasing (Benbrook, 2012; Pimentel and Burgess, 2014). Innovations in low-cost synthetic fertilizers in the 1950s and ‘60s made integrated crop-livestock farming and nutrient recycling biologically obsolete (Davis et al., 2012). Farmer reliance on synthetic fertilizers has increased due to soil fertility declines, yet evidence suggests that synthetic nitrogen depletes soil organic matter, a key indicator of soil health (Mulvaney et al., 2009). Labor efficiency increased with mechanization, and synthetic fertilizers and chemical inputs became increasingly available; meanwhile, specialization of crop and livestock production became more economically viable and efficient. Agricultural research has enabled corn, soy, and wheat to be highly productive per acre harvested. In the 2017/18 season, corn and soy provided $232 and $287 net returns per acre, respectively, and wheat provided $98 per acre (Ash et al., 2018). Yields of these crops and commodities have seen exponential increases prior to and following the Green Revolution in certain areas (e.g., the Corn Belt) yet have begun to plateau in others (e.g., fringes of the Corn Belt) (Hart, 1986; Ray et al., 2012; Pellegrini and Fernández, 2018). These advances led to increasing economies of scale, captured in the growth of farm size, shifts in farm infrastructure toward specialization, and a rapid decline in the number of farms across the U.S. (Hart, 1986; Dimitri et al., 2005).

#### Shifting to smaller farms spikes prices and wrecks productivity.

Tina L. Saitone 17, cooperative extension specialist in the agricultural and resource economics department of the University of California, Davis; and Richard J. Sexton, distinguished professor in the department, 2017, “Concentration and Consolidation in the U.S. Food Supply Chain: The Latest Evidence and Implications for Consumers, Farmers, and Policymakers,” <https://www.kansascityfed.org/documents/764/Concentration_and_Consolidation_in_the_U.S._Food_Supply_Chain_The_Latest_Evidence_and_.pdf>

We believe that any discussions of efficiency and productivity in U.S. or world agriculture should be conducted in the context of the challenges facing world agriculture moving forward. The United Nation’s Food and Agriculture Organization (FAO) projects global food demand to grow by 70 percent from 2005 to 2050 (Alexandratos and Bruinsma). Other analysts (for example, Tilman and others; Ray and others) predict even greater growth in demand in the range of 100–110 percent over the same period. Regardless of the specific demand-growth estimate, most researchers agree that increased agricultural productivity is the key to global food security in the future (Tilman and others; Leifeld). However, growth in crop yields has slowed over the past two decades, with global yield growth for key grains and oilseeds, maize, rice, wheat, and soybeans slowing substantially from 1990 to 2007 compared with the prior 30 years (Alston, Beddow, and Pardy; Grassini and others).

Productivity is also critical to the environmental consequences of food production. This debate centers on the environmental effects of intensive versus extensive expansion of agricultural production to meet global food needs. Given that the leading cause of anthropogenic greenhouse gas emissions is converting land to agriculture, strategically intensifying existing agricultural lands to increase production will lead to greater reductions in greenhouse gas emissions and nitrogen fertilizer use than clearing more land to expand food production (Tilman and others).

As an earlier quote from the U.S. GAO illustrates, considerable evidence supports the efficiency benefits of consolidation in the food chain. Although evidence for the efficiency benefits of vertical coordination is less extensive, it also creates a clear picture. Vertical coordination between producers and downstream buyers enhances efficiency for both buyer and seller. Advantages for the buyer include the ability to operate processing facilities at efficient capacities by securing necessary supplies of the farm product through contracts or vertical integration, with the characteristics and timing needed to operate highly capital-intensive plants efficiently.14 The GAO makes this point as well in describing hog processing:

Large processing plants achieved cost economies by ensuring a smooth and undisrupted flow of hogs so they could operate their plants at near full capacity. Therefore, their desire to continue purchasing hogs to achieve these cost savings could overwhelm any incentives to exercise market power by restricting purchases.

Efficiency gains to farm production from vertical coordination and contracting also appear likely, though the evidence for these is more scant. Key and McBride provide one key example about implementing contract production for hogs. The rapid adoption of resource-providing contracts in hog production in the 1990s provided an unusual natural opportunity to compare the efficiency of contract versus independent production systems. Key and McBride found the contract production system yielded efficiency gains of 20 percent due to improved factor productivity attributed primarily to the transfer of knowledge from processors to producers.

Consequently, regulations such as the GIPSA rules and, indeed, any restrictions on contracting and vertical coordination practices must be evaluated in light of their implications for economic efficiency. If the primary motivation for regulating or proscribing various marketing arrangements is to enhance efficiency by enabling plants to operate at efficient capacity, improve information flows, and reduce the transaction costs of marketing, then regulations that impede these objectives will—under the ordinary transmission of cost and price changes through the marketing channel back to the farm or ranch and forward to consumers—reduce farm prices and producer welfare on net and cause higher consumer prices and reduced consumer welfare. To offer just one example, Brester and Marsh find that technological changes in meatpacking contributed to proportionately greater reductions in marketing margins and increases in real hog prices over time—specifically, they estimate a 1 percent increase in meatpacker productivity reduced the pork farm-wholesale margin by 1.43 percent.

### Yield Link---Brink

#### Continual innovation’s key to sustain yields---every marginal bit matters

Julian M. Alston 20, Distinguished Professor of Agricultural and Resource Economics and Director of the Robert Mondavi Institute at University of California, Davis; and Philip Pardey, Professor of Science and Technology Policy in the Department of Applied Economics, and Director of the University of Minnesota's International Science and Technology Practice and Policy center, May 2020, “INNOVATION, GROWTH AND STRUCTURAL CHANGE IN AMERICAN AGRICULTURE,” https://www.nber.org/system/files/working\_papers/w27206/w27206.pdf

Like other parts of the economy, agriculture is characterized by market failures associated with incomplete property rights over inventions. The atomistic structure of much of agriculture means that the attenuation of incentives to innovate is more pronounced than in other industries that are more concentrated in their industrial structure. On the other hand, unlike most innovations in manufacturing, food processing, or transportation, agricultural technology has a degree of site specificity because of the biological nature of agricultural production, in which appropriate technologies vary with changes in climate, soil types, topography, latitude, altitude, and distance from markets. The site-specific aspect circumscribes the potential for knowledge spillovers and the associated market failures that are exacerbated by the small-scale, competitive, atomistic industrial structure of much of production agriculture.

Agriculture is further distinguished by the biological and spatial nature of its production technology (Joglekar et al. 2016). Agricultural production takes up a lot of space—indeed, about 40% of the world’s land area is occupied by agriculture (including 12% used for crops) and 44% of U.S. land is in agriculture—and the nature of the space varies in ways that are relevant for the choice of technology and the returns to innovations that are often very site-specific. The biological nature of agricultural production means that production processes take time, during which outcomes are susceptible to the influence of factors such as weather and pests that are difficult or costly to control. Moreover, the agricultural production consequences of pests and weather vary in ways that are often uncontrolled and difficult to predict with present knowledge and technology, not only within a season but systematically over time and space. Climate change and the co-evolution and adaptation of pests and diseases mean maintenance research is required to prevent yields from declining—the “Red Queen” effect as discussed by Olmstead and Rhode (2002) for instance. 4 These features of agriculture give rise to a demand for innovations that reduce the susceptibility of production to uncontrolled biotic and abiotic stresses and allow technology to adapt to changes in the farming environment or changes in technological regulations.

### Yield Link---AT: Global Solves

#### Ag innovation is site-specific---R&D outside the U.S. can’t boost yields here

Julian M. Alston 20, Distinguished Professor of Agricultural and Resource Economics and Director of the Robert Mondavi Institute at University of California, Davis; and Philip Pardey, Professor of Science and Technology Policy in the Department of Applied Economics, and Director of the University of Minnesota's International Science and Technology Practice and Policy center, May 2020, “INNOVATION, GROWTH AND STRUCTURAL CHANGE IN AMERICAN AGRICULTURE,” https://www.nber.org/system/files/working\_papers/w27206/w27206.pdf

Where in the rest-of-the-world agricultural R&D takes place matters as much as the amount and types of research conducted in the United States for the innovative future of U.S. agriculture. Just as genetic innovations conceived in the health sector have benefited agriculture (and vice versa), rest-of-world agricultural knowledge stocks have spatial spillover consequences for U.S. agriculture (see, e.g., Clancy et al. 2020). However, space matters more for agriculture, and many agricultural innovations are site-specific. Consequently, taking wheat as an example, research targeted for agroecologies (or production systems) that are agroecologically distant from current or prospective wheat areas in the United States, are likely to be less consequential for wheat innovation in the United States than if they were targeted to U.S. agroecologies.14 Thus, with an increasing share of the world’s agricultural research taking place outside the United States, the global stock of scientific knowledge can be expected to have less relevance for innovations within U.S. production agriculture in the decades ahead relative to decades past.15

### Yield Link---AT: Sanderson & Cox

#### Sanderson and Cox are wrong---consolidated ag’s less environmentally harmful globally than a transition to small-scale or any other ag system would be

Ted Nordhaus 21, founder and executive director of the Breakthrough Institute; and Dan Blaustein-Rejto, director of food and agriculture at the Breakthrough Institute, has conducted research with the Environmental Defense Fund, International Center for Tropical Agriculture, and Farmers Market Coalition, 6/2/21, “Small Farms, Big Pollution,” https://foreignpolicy.com/2021/06/02/big-agriculture-pollution-small-farms-inefficient/

A reader could be excused for concluding from Matthew R. Sanderson and Stan Cox’s criticism of our recent essay, “Big Agriculture Is Best,” that virtually all environmental impacts associated with the production of food in the United States and globally can be laid at the feet of “industrial agriculture.” But it is a definitional sleight of hand, not “empirical evidence,” as they claim, that does most of the work here. Sanderson and Cox define “industrial agriculture” so capaciously as to be basically synonymous with “agriculture.”

In the United States, that is arguably true. Most agricultural output—and hence environmental impacts—comes from large-scale, industrial production. Globally, it is not true. In both cases, there is no free lunch. Agriculture, unavoidably, has environmental impacts for the simple reason that growing food requires the conversion of forests, grasslands, and other ecosystems into fields whose biocapacity is then monopolized to produce food for people.

As human populations have grown enormously over the last two centuries, from about a billion people globally in 1800 to nearly 8 billion today, and as those populations have become wealthier and able to eat higher on the food chain, the impacts associated with food production have grown as well. But that has little to do with the prevalence of industrial versus nonindustrial agriculture. Instead, it reflects the basic realities associated with scaling agriculture globally to meet those enormous new demands.

Consider the negative impacts that nitrogen pollution from the American corn belt has had on the Gulf of Mexico. Most of that runoff comes from industrial farms for the simple reason that large-scale, intensive production is the dominant form of agriculture across the region. Shifting production to organic practices, though, wouldn’t much change the situation. Organic farms are typically associated with higher rates of runoff per calorie of food produced, even as they require more land. So unless total production were very substantially scaled back, a corn belt dominated by organic farms rather than conventional ones would require more land while having similar or even greater impacts on waterways and biodiversity.

Sanderson and Cox blame industrial agricultural in the corn belt not only for the dead zone in the Gulf of Mexico but for rendering “entire landscapes uninhabitable” across the region. Millions of Americans still comfortably living in such places would beg to differ. Yes, as Sanderson and Cox note, there are more hogs in the state of Iowa than people. So what? Insofar as the claim is relevant at all, it regards the question of why Iowa has so few people, not why it has so many hogs. And while the expansion of hog farming in the state in recent decades is attributable to industrial production methods, the decline of the human population is not, as large-scale rural outmigration has been underway in Iowa for over a century. As we note in our essay, rural depopulation has been much more the cause of the consolidation and industrialization of American agriculture than it is the result of those farming practices.

Sanderson and Cox similarly attribute the loss of topsoil across the region to industrial farming. But while it is true that a recent study found that lots of topsoil across the Midwest has been lost, that study compared present-day levels against a baseline that estimated the levels of topsoil in the region prior to its conversion to agriculture. The study did not estimate the contribution of current industrial systems versus earlier, less intensive farming practices across the region. Anyone even slightly familiar with the history of the Dust Bowl, though, can figure out that much of the region’s topsoil was lost long before highly intensive, mechanized agriculture became the norm.

Questionable claims keep coming. Sanderson and Cox attribute the 14.5 percent of global greenhouse gas emissions that result from animal agriculture to the scaling up of industrial agriculture. But a significant majority of greenhouse gas emissions associated with animal agriculture result from beef and dairy production. Around the world, only 15 percent of beef production is produced intensively. Moreover, most studies find that industrial animal production is less greenhouse gas intensive than alternative production systems.

Sanderson and Cox claim that industrial agriculture is responsible for choking air pollution in India. But insofar as agriculture is a major contributor to terrible air quality in Indian cities, it is due to small farmers who burn their fields after harvest, in part because they lack the assets and economies of scale to afford machinery that would eliminate the need to burn crop residues. They similarly claim that industrial farming is responsible for an increase in tropical deforestation in Brazil. In fact, deforestation rates in Brazil have fallen dramatically since the turn of the century thanks to both stronger forestry laws and more intensive and technological farming. The uptick in deforestation in the region in more recent years, on the other hand, appears to be driven more by smallholder farmers and ranchers who lack land tenure and access to fertilizer, seeds, and machinery.

Sanderson and Cox even attribute suicides of Indian farmers and in rural American communities to industrial agriculture. Such claims are offensive. The canard that Monsanto or GMOs or industrial farming is the cause of suicides among Indian farmers has been extensively debunked from virtually the moment that the anti-modern polemicist Vandana Shiva first popularized the claim several decades ago. In reality, it’s not even clear that suicide rates among farmers have actually risen in recent decades, as reliable data from earlier periods is lacking.

What we know at this point is that suicides among poor farmers in India have many causes, from banking reform in the early 1990s to crop failures and lack of irrigation to the removal of government price controls and lack of effective crop insurance programs. What is clear is that low productivity and lack of access to irrigation, credit, and machinery plague the vast majority of small farmers in India, condemning them to poverty. Outlandish and ideologically motivated claims about farmer suicides shed no light on this tragedy, disrespecting the dead and doing no service to the living.

In the United States, moreover, the decline of rural economies and the consolidation and intensification of agriculture are the result of the long-term shift of the U.S. economy away from resource extraction and agriculture and toward the manufacturing, knowledge, and service sectors. “Deaths of despair” across rural America are tragic, but insofar as there is a solution, it almost certainly does not involve putting millions of Americans back to work in the fields.

In the end, Sanderson and Cox argue that we, like Pangloss in Voltaire’s Candide, believe we “live in the best of all worlds.” It is a well-trod trope of those who would offer millenarian solutions to the world’s problems. And it is almost always deployed not against those who oppose efforts to ameliorate the world’s ills but rather against those who would take the world as it is and improve it. The irony is that Voltaire was a progressive and a reformer, not a revolutionary—an agricultural modernizer, early industrialist, defender of workers’ rights, and opponent of feudal land relations and the clerical establishment.

By contrast, Sanderson and Cox, like the clerics whom Voltaire railed against, offer a magical vision of a better future not in this world but the next, calling for a “50-year farm bill” that would remake U.S. agriculture around perennial, as opposed to annual, crops. This has been the work of the Land Institute, Cox’s employer, for over 40 years. By the institute’s own acknowledgement, achieving yields remotely comparable to annual crops will require at least another 40 years of plant breeding.

Perhaps that will come to pass. In the meantime, making agriculture better, in this world, will require continuing to do what we have been up to for a very long time as humans—innovating to raise the labor and resource efficiency of the food system we have in order to produce more food with less land, less labor, and less environmental impact.

# Neg---Econ DA

## 1NC

### Econ DA---1NC

#### A job guarantee would crowd out private sector investment which crashes the economy. Independently, the plan would balloon government spending.

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Ryan Bourne, 4-24-18, "A Jobs Guaranteed Economic Disaster", Cato Institute, https://www.cato.org/blog/jobs-guaranteed-economic-disaster

Title: A Jobs Guaranteed Economic Disaster

Democrats are plugging new energy into an old idea: a federal “Jobs Guarantee” program. Senator Cory Booker previously introduced legislation for a pilot in high unemployment communities. Now Senator Bernie Sanders will announce a plan guaranteeing a job or training paying $15 an hour and health‐​care benefits to every American worker “who wants or needs one,” in a host of public infrastructure, care giving and environmental upkeep projects.

The scheme, seemingly based on a recommendation from the Levy Economic Institute, comes with grandiose purported benefits. It would, we are told, eliminate involuntary unemployment, deliver a living wage, boost GDP, reduce the cost of recessions, raise labor market standards, reduce environmental degradation, reduce racial inequality, and much else besides. If it sounds too good to be true, that’s because it is. There are severe problems with this idea, which can be loosely grouped under three “c’s”: costs, crowd out and corruption.

Costs

The Levy Economic Institute calculates up to 16 million could take part in such a program today (including the unemployed, those working part time seeking full time work and individuals currently inactive who might move into the labor market). Given the federal government would have to pay $15 an hour for full time jobs, plus benefits equal to 20 percent of wages, total labor costs per worker would be $37,440 per year. That’s before the cost of the materials for the programs and administration of the program itself. Even assuming some opt for part‐​time positions, and ignoring the non‐​labor program costs, we are talking about a gross cost of up to around 2.4 percent of GDP, significantly higher than the existing Medicaid program (2 percent of GDP).

The net cost on these assumptions will be lower, of course. People who take jobs will require less in welfare payments and pay some back in taxes. Some might wisely consider it a risk for their employment fortunes to be tied to the whims of politicians and their willingness to fund this program, and so remain in the private sector. But even taking this into account, and assuming the policy generates the macroeconomic bounty that the Levy researchers expect, they still think the annual net cost will be between 0.8 and 2 percent of GDP, with the program employing up to 10 percent of the workforce. That would in itself be a huge new commitment to finance at a time when the long‐​term fiscal outlook is already dire, and the short‐​term deficit already expected to balloon to over 5 percent of GDP in the coming years.

Crowd‐​out

In reality, the fiscal costs are likely to be much, much higher, and the economic welfare losses even more significant, because in the labor market and broader economy, a public jobs guarantee program would significantly crowd out productive private sector activity. This type of policy will radically alter behavior of both workers and businesses, and so the supply and demand for labor.

The Census shows that, among those who worked in 2016, 70+ million Americans earned under $32,500 (the full‐​time job guarantee salary would be $31,200). Yes, not all of these would seek out positions on the jobs guarantee program. But a large proportion would, especially those employed in uncertain roles with low levels of job security.

In fact, some even paid more than $31,200 might consider leaving their jobs to pursue guaranteed roles if they perceive better working conditions or an easier worklife (asked under what conditions someone would be fired from such a role, the Levy Institute paper suggests that you would be sacked for failing to go to work, but that your performance would not be judged by “private sector ‘efficiency criteria’”, for example.) It’s not inconceivable then that over 25 percent of the labor force could find itself part of the scheme.

This crowd‐​out is likely to be particularly acute in low productivity regions, and (ironically) after economic downturns. A nationwide jobs guarantee program paying $15 an hour will be particularly attractive to workers in low wage regions, and by setting a de facto wage floor the program will prevent private investment in regions on the basis of cheap labor.

Though no doubt there would be some demand spillovers from well‐​paid jobs, the net consequence is highly likely to be weaker private sector job creation in poor regions, which has been the experience of countries such as Britain with a nationwide minimum wages and public sector national pay bargaining. Proponents of the scheme see “higher labor standards” as a good thing, but absent productivity improvements, policies which raise labor costs significantly will reduce the quantity of workers demanded.

There’s good reason to expect the policy will reduce the efficiency and productive potential of the economy too. Taxes will eventually need to be raised to cover the net cost of the program. In infrastructure and care giving provision, costs will rise – because nobody would now work in these directly substitutable sectors for less than the wage and conditions offered in the job guarantee program. This will waste resources, and there’s highly likely to be overinvestment in lots of relatively low value ventures and programs to ensure workers are employed, especially given the explicit aim is to provide employment rather than deliver projects at low cost.

Throwing resources at regions with higher levels of unemployment and after recessions too will work directly against market signals and deter the mobility of labor (in geographic and industrial terms) and capital to its most productive uses given prevailing market conditions. This is important: yes, employment is highly likely to have some positive externalities; but the real driver of better living standards over time are productivity improvements, discovered by market‐​based activity.

Proponents of this policy seem to put an enormous weight on the idea that time out of the labor market has huge scarring consequences which could be ameliorated by any type of temporary employment. But the literature on this shows that temporary jobs do not provide the workers with skills to improve longer‐​term labor market outcomes.

Corruption and incentives

As if all these consequences were not bad enough, such a program will be ripe for corruption and political interference at the government, provider and individual level. Senator Sanders’ plan would be administered by the Department for Labor, with local and state governments submitting projects to regional offices for consideration. There’s a huge question mark on whether projects will be considered on economic grounds, when there might be an incentive for make‐​work schemes to aid particular politicians or indeed to put resources towards “public good” causes or NGOs more in line with the ethos of the governing party. For Democrats this might be for environmental issues. For Republicans it might be, say, for a wall on the southern border.

NGOs and local public bodies themselves will have incentives to apply for federal funds for projects that would otherwise have occurred anyway, and to maximize the number of applications. Pork barrel projects would proliferate. What is more, at the individual level, the guarantee coupled with the purported unwillingness to judge worker performance on a commercial basis will incentivize low levels of work effort on the margin.

Conclusion

The Jobs Guarantee then is an extremely large and costly endeavor, which would have major economic consequences and risk a large federal politicization of the labor market and public project delivery.

The US does have serious labor market issues to contend with — not least depressed labor participation and a weak productivity outlook — but are things really so bad that they require such a risky and extensive policy response?

Well‐​paid jobs and low levels of real unemployment are outcomes desired by all. But attempting to achieve that through this program amounts to cracking a nut with a sledgehammer, undermining what matters far more for living standards: efficiency and productivity.

#### That spending along with nominal wage hikes would dramatically increase inflation. This blows up the economy and turns the case through declining real income.

Edwards 19 – Sebastian, Chilean economist, Professor of International Business Economics at UCLA, former Chief Economist for the Latin America and Caribbean Region of the World Bank, research associate of the National Bureau of Economic Research, a member of the advisory board of Transnational Research Corporation and co-chairman of the Inter American Seminar on Economics, former President of the Latin American and Caribbean Economic Association.

Sebastian Edwards, 2019, "Modern Monetary Theory: Cautionary Tales from Latin America", Cato Institute, Cato Journal Vol. 39 No. 3, https://www.cato.org/cato-journal/fall-2019/modern-monetary-theory-cautionary-tales-latin-america

During the last few years an apparently new and revolutionary idea has emerged in economic policy circles in the United States: “Modern Monetary Theory” (MMT). The central tenet of this view is that it is possible to use expansive monetary policy — money creation by the central bank (i.e., the Federal Reserve) — to finance large fiscal deficits, and create a “jobs guarantee” program that will ensure full employment and good jobs for everyone.1 This view is related to Abba Lerner’s (1943) “functional finance” idea, and has become very popular in progressive spheres. According to MMT supporters, this policy would not result in crowding out of private investment, nor would it generate a public debt crisis or inflation outbursts.2

MMT runs against received wisdom among economists, and has been resisted by Keynesians and monetarists alike. Respected and influential academics such as Paul Krugman, Kenneth Rogoff, and Larry Summers, among others, have stated that MMT makes little sense. Krugman (2019b) has written that the principles behind MMT are “indefensible,” and that the arguments made by its supporters are “sophistry.” According to Rogoff (2019), MMT is “nonsense” based “on some fundamental misconceptions.” And Summers (2019) has contended that embracing “modern monetary theory is a recipe for disaster.”

MMT supporters have responded by saying that their critics don’t truly understand how modern monetary economies work. According to them, in countries with a currency of their own, governments don’t face a hard budget constraint; the government can always print additional money to pay for higher expenditures.3 According to Stephanie Kelton (2019), “The government budget is not like a household budget because the government prints its own money.” Along similar lines, Forstater and Mosler (2005) have argued that in a “fiat money” system the natural rate of interest is zero; the role of the monetary authority is to push the actual rate to zero, through the purchase of government securities. If long‐​term equilibrium interest rates are equal to zero, then r < g in growing economies — that is, the rate of interest is lower than the rate of growth of GDP — and there would be no explosion of government debt.4

MMT supporters have argued that, in order for these policies to work, the country in question does not need to have a “convertible currency”; all is needed is sovereign fiat money that economic agents have to use to pay taxes. Thus, MMT would still work in emerging countries with a currency of their own, including in many of the nations of Asia and Latin America. Wray (2015: 127–28) makes this point explicitly, when he writes:

The United States (and other developed nations to varying degrees) is special but all is not hopeless for the nations that are “less special.” To the extent that the domestic population must pay taxes and other obligations in the government’s currency, the government will be able to spend its own currency into circulation. And where the foreign demand for domestic currency assets is limited, there still is the possibility of nongovernment borrowing in foreign currency to promote economic development that will increase the ability to export.

MMT supporters have also posited that their policies would work best in countries that do not have a fixed exchange rate (Wray 2015: 124–29).

Efforts to evaluate the merits of MMT have run into two types of difficulties. First, there is no unified and generally accepted description of how the MMT model is supposed to work in detail. This is not due to a lack of publications. In fact, MMTers are prolific authors, and have published a large number of papers, pamphlets, and books, including some primers. However, these works contain very few (if any) equations or diagrams; MMT authors have generally avoided the language that, for better or for worse, has become dominant in scholarly conversations among professional economists.5 By doing this, MMTers have left themselves open to the criticism that their views and models lack clarity. According to Paul Krugman (2019a) MMT supporters “tend to be unclear about what exactly their differences with conventional views are, and also have a strong habit of dismissing out of hand any attempt to make sense of what they’re saying.”

A second difficulty in evaluating MMT is that its supporters have offered very little empirical evidence on how the policy would function, especially in the medium and longer run.6 Although some authors have argued that Japan during the last decade or so provides evidence that the approach works, most critics — including the governor of the Bank of Japan, Haruhiko Kuroda — disagree with that contention (Reynolds and Nobuhiro 2019). When discussing the applicability of MMT to the United States, Irwin (2019) has argued that it is important to have the policies first implemented in a small country, as an experiment. He wrote:

It would be nice to have some proof of concept before it is put in place in the largest economy in the world — also home to the world’s reserve currency… . It would be genuinely fascinating to watch a small country — with its own currency — govern itself according to the [MMT] theory’s principles… . If those smaller countries can work out the kinks of economic governance in an MMT world, and achieve a higher standard of living, maybe then scale it up to a midsize country?

It turns out that MMT — or some version of it — has been tried in a number of emerging countries. Although most cases have taken place in Latin America, there have also been episodes in other parts of the world, including in Turkey and Israel. MMT‐​type policies were also attempted in France during the Mitterrand presidency. Almost every one of the Latin American experiments with major central bank–financed fiscal expansions took place under populist regimes, and all of them ended up badly, with runaway inflation, huge currency devaluations, and precipitous real wage declines. In most of these episodes — Argentina, Bolivia, Brazil, Chile, Ecuador, Nicaragua, Peru, and Venezuela — policymakers used arguments similar to those made by MMTers to justify extensive use of money creation to finance very large increases in public expenditures.7

In this article, I analyze some of Latin America’s episodes with MMT‐​related policies and show that all these cases ended up in major macroeconomic disasters. The analysis uses the framework developed by Dornbusch and Edwards (1990, 1991) for studying macroeconomic populism. The rest of the article is organized as follows: First, I present the basic principles of Latin American populism and compare them to MMT. Next, I analyze three specific Latin American episodes with major central bank–financed fiscal expansions: Chile during President Salvador Allende’s socialist experiment (1970–73), Peru during the first Alan García presidency (1985–90), and Venezuela under Hugo Chávez and Nicolás Maduro (1998–present). These are the “cautionary tales” referred to in the title of this article. Finally, I provide some concluding remarks, including a brief discussion of MMTs weakest points.

Latin American Populism

Macroeconomic populism is usually defined as a set of policies aimed at redistributing income by running high fiscal deficits, financed through an expansive monetary policy.8

The Mechanics of Latin American Populism and MMT

In the language of textbook macroeconomics, these are policies where the government shifts simultaneously, and significantly, the IS and the LM curves.9 In every Latin American experience with populist policies the government granted wage increases — both public‐​sector and minimum wages — that exceeded significantly what was justified by improvements in productivity. Just as MMTers, populist politicians present heterodoxy as the solution to the nation’s ills, and in particular to the suffering of the middle and lower classes.10

For populists, one of the features of capitalist economies is the existence of substantial idle capacity. Thus, in their view, large and persistent fiscal deficits financed through money creation do not result in serious imbalances, high inflation, and, eventually, crises. For populists the contrary is true: large fiscal deficits expand demand and encourage output, allowing firms to exploit economies of scale and to use resources fully. For them the combination of large deficits with redistributive policies results in a decline in inflation. Populists tend to dismiss possible collapses in the demand for domestic money, and increases in the velocity of circulation; in this, their perspective is, again, very similar to that of MMT supporters.11

These views are clearly captured by the following quote from Daniel Carbonetto (1987: 82), the economist behind Alan García’s populist policies in Peru in the second half of the 1980s: “If it were necessary to summarize the strategy adopted by the government since August 1985 with two words, they are control (meaning control of prices and costs) and spend, transferring resources to the poor so that they increase consumption.” Carbonetto (1987: 83) then added that budget constraints had to be ignored: “It is necessary to spend, even at the cost of a large fiscal deficit, because, when this deficit transfers public resources to increase consumption of the poorest, they demand more goods and this will bring about a reduction in unit costs. Thus the deficit is not inflationary.”

This statement is very similar to what Stephanie Kelton, one of the most prominent supporters of MMT, stated: “The government budget is not like a household budget because the government prints its own money” (Walsh 2018). It is also similar to what Wray (2015: 104) writes in his primer on MMT: “The following statements do not apply to a sovereign currency issuing government… . Governments have a budget constraint … Government deficits drive interest rates up, crowd out the private sector, and lead to inflation.”

In addition to rejecting fiscal balance and sound monetary policy, Latin American populists reject markets, competition, and globalization. They believe in price and exchange controls, high minimum wages, high import tariffs, and large subsidies, mostly for food and public transportation. They support state‐​owned enterprises and favor nationalizing large multinationals (often associated with natural resources, such as oil and mining). In some instances, Latin American populists have borrowed from Marxist ideology, as was the case with Hugo Chávez’s “socialism of the 21st century” program.12

It would be a mistake, however, to believe that populists “like” or “favor” inflation. They don’t. In fact, before taking power, populist politicians usually declare that one of their fundamental objectives is to reduce or eliminate inflation. They state that price increases benefit large monopolistic firms and hurt the working class. For instance, in Chile, the Unidad Popular electoral platform of 1970 stated that a main goal of the “popular government” was to achieve “price stability.“13 In speech after speech President Salvador Allende pointed out that price controls would play a key role in defeating inflation.14 Even though the quantity of money increased by 124 percent during his first year in office, he did not see that as a problem. On the contrary, for him monetary expansion played a key role in helping finance Chile’s move toward Socialism.15 MMT supporters also assert that one of their main goals is to achieve price stability. According to Wray (2015: 244), “MMTers fear inflation… . Indeed, price stability has always been one of the two key missions of [the MMT approach].”

In sum, there are a number of coincidences between the policy recommendations (and actions) of Latin American populists and MMT supporters. In order to further organize the discussion, Table 1 presents a systematic comparison of both perspectives on a number of key policies.

[[Chart Omitted]]

The Four Phases of Latin American Populism

Most macroeconomic populist experiments go through four distinct phases that span from euphoria to collapse. The length of the cycle depends on a number of factors, including the evolution of the terms of trade, political institutions, the availability of foreign financing by friendly nations, and the degree of political repression.16 In the vast majority of Latin American populist episodes, the leader comes to power after a major crisis. In many cases, the IMF has been called to bring order into the economy. In every case, the IMF imposed an “austerity‐​based” adjustment program, which exacerbated the sense of frustration among the country’s citizens, and in particular among the middle and lower classes. Although a structurally unequal distribution of income is not a requirement for the emergence of populism, populist rhetoric is more attractive in countries with significant income disparities, or in countries where inequality has increased during the immediate past (Edwards 2010: chap. 1).

Dornbusch and Edwards (1991) identify the following four phases of populism.

Phase 1. Policies very similar to those espoused by MMT are first put in place. Government expenditures increase rapidly, and massive income transfers are implemented. Public‐​sector wages and minimum wages are raised, and large public‐​sector investment projects enacted. These policies are financed by a combination of easy money that flows from the central bank, and foreign resources that come from the country’s international reserves. During this early phase growth and wages increase, and the populist views appear to be vindicated. The populist leader repeatedly makes the point that orthodox economics and its supporters are wrong.

Phase 2. The consequences of the overly expansive heterodox policies begin to show up, and bottlenecks and imbalances emerge. Foreign exchange becomes scarce and there is significant pressure for the currency to depreciate rapidly. Exchange controls are introduced — France under Mitterrand, in 1984, is a good example of this development from outside of Latin America. In some cases, traditional exports are taxed. In spite of these measures, prices continue to rise. The populist response is to decree generalized price controls. Unions ask for higher salaries, and indexation practices are adopted. The central bank continues to lend vast amounts to the public sector, helping maintain the experiment. The economy enters into an inflationary spiral. A black market for necessities, and a parallel market for foreign exchange, usually appears.

#### A new, prolonged recession risks global nuclear conflict.

**Sundaram and Popov 19** – former economics professor, was United Nations Assistant Secretary-General for Economic Development, and received the Wassily Leontief Prize for Advancing the Frontiers of Economic Thought in 2007; former senior economics researcher in the Soviet Union, Russia and the United Nations Secretariat, is now Research Director at the Dialogue of Civilizations Research Institute in Berlin

Jomo Kwame Sundaram and Vladimir Popov, "Economic Crisis Can Trigger World War," Inter Press Service, 2-12-2019, http://www.ipsnews.net/2019/02/economic-crisis-can-trigger-world-war/

KUALA LUMPUR and BERLIN, Feb 12 2019 (IPS) - Economic recovery efforts since the 2008-2009 global financial crisis have mainly depended on unconventional monetary policies. As fears rise of yet another international financial crisis, there are growing concerns about the increased possibility of large-scale military conflict**.**

More worryingly, in the current political landscape, prolonged economic crisis, combined with rising economic inequality, chauvinistic ethno-populism as well as aggressive jingoist rhetoric, including threats, could easily spin out of control and ‘morph’ into military conflict, and worse, world war.

Crisis responses limited

The 2008-2009 global financial crisis almost ‘bankrupted’ governments and caused systemic collapse. Policymakers managed to pull the world economy from the brink, but soon switched from counter-cyclical fiscal efforts to unconventional monetary measures, primarily ‘quantitative easing’ and very low, if not negative real interest rates.

But while these monetary interventions averted realization of the worst fears at the time by turning the US economy around, they did little to address underlying economic weaknesses, largely due to the ascendance of finance in recent decades at the expense of the real economy. Since then, despite promising to do so, policymakers have not seriously pursued, let alone achieved, such needed reforms.

Instead, ostensible structural reformers have taken advantage of the crisis to pursue largely irrelevant efforts to further ‘casualize’ labour markets. This lack of structural reform has meant that the unprecedented liquidity central banks injected into economies has not been well allocated to stimulate resurgence of the real economy.

From bust to bubble

Instead, easy credit raised asset prices to levels even higher than those prevailing before 2008. US house prices are now 8% more than at the peak of the property bubble in 2006, while its price-to-earnings ratio in late 2018 was even higher than in 2008 and in 1929, when the Wall Street Crash precipitated the Great Depression.

As monetary tightening checks asset price bubbles, another economic crisis — possibly more severe than the last, as the economy has become less responsive to such blunt monetary interventions — is considered likely. A decade of such unconventional monetary policies, with very low interest rates, has greatly depleted their ability to revive the economy.

## UQ---Econ

### UQ---T/L---2NC

#### The economy will survive and grow in 2023.

Sor 5-16 – Jennifer, reporter for Markets Insider. BA in Economics from UC Santa Barbara

Jennifer Sor, 5-16-2023, "Here's why the US economy is in much better shape than people think, according to top economist Paul Krugman", Markets Insider, https://markets.businessinsider.com/news/stocks/paul-krugman-economy-nyt-recession-unemployment-growth-2023-5

Americans are still fretting over a potential recession, but the economy is actually faring much better than most people think, according to Nobel economist Paul Krugman.

In an op-ed for the New York Times on Monday, Krugman pointed to widespread pessimism about the US economy, despite indicators that show economic activity is fairly healthy.

Though 93% of CEOs expect the economy to tip into a recession within the next 18 months, according to the Conference Board's latest survey, Krugman noted that the job market is the strongest it's been in decades, with the US adding 6 million jobs since December 2021. The unemployment rate has also dropped to its lowest level since the 1960s, while job satisfaction is at an all-time-high.

And while inflation was a top concern for Americans in 2022, prices have been coming down for much of the past year, cooling to 4.9% in the April Consumer Price Index report. That's over 500 basis-points lower from where prices where in June 2022, when inflation notched a 41-year-high of 9.1%.

"The interesting question now is why, at least according to some surveys, the public remains very negative on the economy – as negative as it has been in the past amid severe economic downturns – even though those recession calls were clearly a false alarm, and the economy is actually looking remarkably strong," Krugman said.

Markets grew particularly skittish about recession risks last year when the US slipped into a technical recession defined by two straight quarters of negative GDP growth.

But official recessions are declared by the National Bureau of Economic Research, which uses other data to determine if the US is truly in a recession. So far, those other indicators say that it is not, Krugman said.

He speculated that the gloomy outlook on the economy stemmed from Americans who were assuming others were facing economic difficulties, though most people themselves are still dealing with upbeat personal fortunes. The odds of a future recession have also been widely publicized through media reports, which could be creating a negative bias.

#### If there is a recession, it will be modest. Most economic indicators are looking good.

Krugman 5-13 – Paul, Professor of Economics at the Graduate Center of the City University of New York and a columnist for The New York Times. 2008 winner of the Nobel Prize in Economics.

Paul Krugman, 5-13-23, “Why Are Americans So Negative About the Economy?” New York Times, https://www.nytimes.com/2023/05/15/opinion/americans-negative-economy.html

The interesting question now is why, at least according to some surveys, the public remains very negative on the economy — as negative as it has been in the past amid severe economic downturns — even though those recession calls were clearly a false alarm, and the economy is actually looking remarkably strong. Or maybe the question should be why people say that they’re very negative on the economy.

This is a touchy subject, albeit one I’ve commented on before. You don’t want to say that Americans are stupid; you certainly don’t want to sound like that John McCain adviser who insisted that America was a “nation of whiners” who were experiencing only a “mental recession.”

On the other hand, there are now huge gaps between what people say about the economy and both what the data says and what they say about their own experience. And we have some new information on what lies behind these gaps.

First, about that much-hyped “Biden recession.” The actual definition of a recession involves several economic indicators, and aside from those G.D.P. numbers, nothing that has happened to the economy looks remotely like a recession.

Since December 2021 the U.S. economy has added almost six million jobs while the unemployment rate has fallen from 3.9 percent to 3.4 percent, a level not seen since the 1960s. And no, unemployment isn’t low because Americans have dropped out of the labor force: The percentage of adults either working or looking for a job has declined, but that’s almost entirely a result of an aging population, and labor force participation is right back in line with prepandemic projections.

And these are good jobs, according to workers themselves. According to the Conference Board, which has been surveying job satisfaction since 1987, “U.S. workers have never been more content.”

To be sure, the return of serious inflation after decades of quiescence rattled everyone, and not just because it reduced real incomes. (Real wages fell during Ronald Reagan’s second term, but people felt pretty good about the economy anyway.) One benefit of low inflation is that it gives people one less thing to worry about; according to the American Psychological Association, inflation was a major source of stress during 2022.

But inflation, while still elevated, has come way down. The inflation rate over the past six months was 3.3 percent, compared with 9.6 percent last June. The price of gasoline, a major political talking point last year, is now more or less normal compared with average earnings.

And people have noticed. In October, 20 percent of Americans named inflation as the most important problem facing the nation; that’s now down to 9 percent.

So what’s going on? The general rule seems to be that Americans are feeling good about their personal situation but believe that bad things are happening to other people. A Federal Reserve study found that in late 2021 a record-high percentage of Americans were positive about their own finances while a record low were positive about the economy. We don’t have results for 2022 yet, but my guess is that they’ll look similar.

Partisanship surely explains much of this divergence. A newly published study shows that who holds the White House has huge effects on views of the economy; this is true for supporters of both parties, although the effect appears to be about twice as strong for Republicans. The study also finds, however, that these changes in reported views don’t appear to have any effect on actual spending — that they reflect “cheerleading,” as opposed to “actual expectations.”

Beyond that, there’s good reason to believe that media reports about the economy have had a strongly negative bias. One thing that has gone really, really right in America lately is job creation, yet the public consistently reports having heard more negative than positive news about employment.

And let’s not let economists off the hook. As Mark Zandi of Moody’s Analytics points out, many economists have been predicting recession month after month for the past year. Sooner or later, a recession will no doubt happen, but as he says, “In my 30-plus years as a professional economist, I’ve never seen such recession pessimism,” even as the economy has remained resilient. And this pessimism has surely filtered through to the public.

So where does all this leave us? America hasn’t yet brought inflation back to prepandemic levels, and we may yet have an economic hard landing. But so far, at least, we’ve had a stunningly successful recovery from the Covid shock.

While many Americans tell surveys that things are terrible — which says something about how people respond to surveys and where they get their information — this doesn’t contradict that positive assessment.

#### Even pessimistic forecasts predict slightly slowed growth but no recession.

Bachman 23 – Daniel, senior manager with Deloitte Services LP, in charge of US economic forecasting for Deloitte’s Eminence and Strategy functions, forecaster and economic analyst at the US Commerce Department. PhD in economics from Brown.

Daniel Bachman, 3-15-2023, "United States Economic Forecast Q1 2023", Deloitte Insights, https://www2.deloitte.com/us/en/insights/economy/us-economic-forecast/united-states-outlook-analysis.html

Currently, however, the US economy is surprisingly healthy, given that it is coming off of a global pandemic, severe supply chain issues, and a war affecting a key global energy supplier. Labor market conditions alone provide a lot of support for the idea that the economy can achieve the desired soft landing (and, despite claims to the contrary, soft landings are not that unusual).2 Inflation remains a concern, but much less of one than it was a year ago. As long as US policymakers can avoid any damaging policy moves, like not lifting the debt ceiling, the signs are good that—after a few quarters of slow growth—the US economy will continue to innovate and create jobs, goods, and services.

Scenarios

Baseline (60%): Economic growth slows to a crawl in 2023, but never really declines enough to merit the label of recession. Tighter monetary policy, slow growth in Europe and China, higher energy prices, and an expensive dollar are significant headwinds for the economy. However, households continue to increase spending on pent-up demand for services such as entertainment and travel. Business investment continues to grow, particularly in information-processing equipment and software. Investment in nonresidential structures remains weak, however, as the oversupply of office buildings and retail space weighs on the market. And the housing market slump really is a recession for that sector. Inflation settles back to the 2% range by late 2023 as demand for goods slows and businesses solve their supply chain issues.

### UQ---AT: Debt Ceiling---2NC

#### The debt ceiling fight will have zero impact on the economy.

Mena 5-31 – Bryan, reporter with The Wall Street Journal's economics team based in Washington, D.C.

Bryan Mena, 5-31-2023, "Debt ceiling deal won't have much impact on the US economy, analysts say", CNN, https://www.cnn.com/2023/05/31/business/debt-deal-economic-effect/index.html

President Joe Biden and House Republicans have finally agreed on a deal to raise the government’s debt ceiling, including changes to the federal budget in a number of areas. Analysts say the agreement could have only marginal effects on the US economy.

That’s based on various estimates showing that government spending will be only slightly pared back over the two years of the deal, creating a small effect on overall economic output as measured by gross domestic product, including a limited number of job losses.

The US economy is the world’s largest, so the relatively modest effects on growth could be good news for investors who feared the debt ceiling crisis could have posed a greater and more widespread drag.

“The impacts will be negative but small,” Mark Zandi, chief economist at Moody’s Analytics, told CNN. “When you net it all out, it’s a modest headwind to a sluggish economy, but I don’t think it’s the thing that’s going to blow the economy over into a recession.”

## Link---Business Confidence

### Biz Con---JG Link---2NC

#### The plan would require a wholesale restructuring of the economy which spooks businesses.

Summers 18 – Lawrence, Charles W. Eliot University Professor and President Emeritus at Harvard University. Secretary of the Treasury for Clinton and the Director of the National Economic Council for Obama.

Larry Summers, 7-3-18, "A jobs guarantee", https://larrysummers.com/2018/07/03/a-jobs-guarantee-progressives-latest-big-idea/

If the United States could guarantee jobs in even a modestly efficient manner and in a way that significantly increased employment, it would be a very good thing. I want to be enthusiastic about job-guarantee proposals. But at a time when cynicism about government runs strong, it is important for progressives to avoid making promises that they cannot keep. We must rigorously examine the practicality of a job guarantee.

A first question is how much to pay. A program of last-resort employment could likely provide the minimum wage and low benefits. But that will not help those laid off from highly paid manufacturing jobs or those who expect to earn wages well above the poverty line. While such a proposal could help many young people, it is far from clear that it would connect with the principal concerns of Rust Belt adults.

On the other hand, if the guaranteed jobs paid premium wages, say double the $7.25 per hour national minimum wage, they would be an attractive alternative for a quarter or more of the workforce, raising questions of cost and economic disruption.

Suppose a $15 per hour guaranteed job drew 4 million additional people into the workforce and also attracted 10 million existing employees, just one quarter of those for whom it would represent a wage increase. The cost, once benefits, materials and supervisory needs are included, would, conservatively, be $60,000 per worker. That would increase government spending by $840 billion — one-fifth of the current federal total. If wages for the 30 million lower-wage workers who remained in the private sector went up by just $4 per hour, private-sector costs would rise by $240 billion. The burden would largely fall on small businesses and disproportionately hurt restaurants and other major employers of low-wage labor.

A second question job guarantees raise is what all these new workers would do. The current federal government civilian workforce comprises 2 million people . Meaningfully increasing employment or offsetting adverse trends even if all hired came off the sidelines of the workforce through a jobs program would require boosting the federal workforce by at least 50 percent.

The United States has large needs, for example in infrastructure and care of the aged. At the federal level, these are met through contracting, not direct hiring. Using an employment guarantee to address these national problems would require significant restructuring of the way services are provided, likely with an efficiency cost.

#### Independently, the plan is a de-facto minimum wage.

Tcherneva 18 – Pavlina, visiting scholar at the University of Cambridge's Centre for Economic and Public Policy, research scholar at the Levy Economics Institute, M.A and PhD in economics from the University of Missouri-Kansas City.

Pavlina R. Tcherneva, 2018, The Job Guarantee: Design, Jobs, and Implementation, Levy Economics Institute of Bard College, https://www.levyinstitute.org/pubs/wp\_902.pdf

12. Why do you say that the JG wage is the effective minimum wage and labor standard for the economy?

The JG serves the function as a “public option for work” because it is open to all, irrespective of income or labor market status. Whatever work and pay conditions it offers will become the standard for the economy as a whole. Under special circumstances someone may prefer lowerpaid private sector work, but as a rule the proposed JG wage ($15 per hour, plus benefits) will become the effective minimum wage. There is some empirical evidence that illustrates this effect (Tcherneva 2013).

#### A sharp increase in wages would wreck business confidence, empirics prove.

Reisman 23 – Nick, political reporter at Spectrum News

Nick Reisman, 3-17-2023, "Business impact of minimum wage hike in New York debated ", https://spectrumlocalnews.com/nys/central-ny/ny-state-of-politics/2023/03/17/business-impact-of-minimum-wage-hike-debated-

The Siena College Research Insititute last week released its annual survey of upstate business leaders in New York.

The findings showed CEOs surveyed hold a bleak view of New York's economy amid rising inflation, a tight labor market, higher borrowing costs and a potential minimum wage increase in the state.

“It’s impossible to sugarcoat the findings of this survey. CEO confidence is down dramatically from a year ago once again reaching the low point we saw in 2020 and greater now only than during the Great Recession of 2008,” said Siena College Research Institute Director Don Levy. “Only about 1 in 5 CEOs now say conditions have been and will continue to improve while about half say the opposite – conditions have and will continue to worsen.”

The survey found a third of company leaders plan to expand their workforce, down from 44% a year ago while at the same time 82% believe there is not enough properly trained workers.

And the survey found by a 61% to 5% margin CEOs believe an increase in the upstate minimum wage from $14.20 to $15 would have a negative effect on the economy.

New York state lawmakers and Gov. Kathy Hochul are weighing a potential minimum wage change in the state budget. Hochul wants to link the minimum wage to the rate of inflation; lawmakers want to increase the base pay first and then index it to the cost of living.

### Biz Con---Econ I/L---2NC

#### Business confidence drives recovery.

Cambon 21 – reporter at the Wall Street Journal, citing Robert Rosener, senior U.S. economist at Morgan Stanley

Sarah Chaney, 6-27-21, the Wall Street Journal, "Capital-Spending Surge Further Lifts Economic Recovery" https://www.wsj.com/articles/capital-spending-surge-further-lifts-economic-recovery-11624798800

Business investment is emerging as a powerful source of U.S. economic growth that will likely help sustain the recovery.

Companies are ramping up orders for computers, machinery and software as they grow more confident in the outlook.

Nonresidential fixed investment, a proxy for business spending, rose at a seasonally adjusted annual rate of 11.7% in the first quarter, led by growth in software and tech-equipment spending, according to the Commerce Department. Business investment also logged double-digit gains in the third and fourth quarters last year after falling during pandemic-related shutdowns. It is now higher than its pre-pandemic peak.

Orders for nondefense capital goods excluding aircraft, another measure for business investment, are near the highest levels for records tracing back to the 1990s, separate Commerce Department figures show.

“Business investment has really been an important engine powering the U.S. economic recovery,” said Robert Rosener, senior U.S. economist at Morgan Stanley. “In our outlook for the economy, it’s certainly one of the bright spots.”

Consumer spending, which accounts for about two-thirds of economic output, is driving the early stages of the recovery. Americans, flush with savings and government stimulus checks, are spending more on goods and services, which they shunned for much of the pandemic.

Robust capital investment will be key to ensuring that the recovery maintains strength after the spending boost from fiscal stimulus and business reopenings eventually fades, according to some economists.

Rising business investment helps fuel economic output. It also lifts worker productivity, or output per hour. That metric grew at a sluggish pace throughout the last economic expansion but is now showing signs of resurgence.

The recovery in business investment is shaping up to be much stronger than in the years following the 2007-09 recession. “The events especially in late ’08, early ’09 put a lot of businesses really close to the edge,” said Phil Suttle, founder of Suttle Economics. “I think a lot of them said, ‘We’ve just got to be really cautious for a long while.’”

Businesses appear to be less risk-averse now, he said.

After the financial crisis, businesses grew by adding workers, rather than investing in capital. Hiring was more attractive than capital spending because labor was abundant and relatively cheap. Now the supply of workers is tight. Companies are raising pay to lure employees. As a result, many firms have more incentive to grow by investing in capital.

Economists at Morgan Stanley predict that U.S. capital spending will rise to 116% of prerecession levels after three years. By comparison, investment took 10 years to reach those levels once the 2007-09 recession hit.

#### Studies prove biz con’s key AND depends on perceptions of policy stability.

Montes 21 – Gabriel PhD Candidate in the Department of Economics at Fluminense Federal University, and Fabiana da Silva Ph.D. in Economics from Universidade Federal Fluminense, Professor of Economics at the Universidade de Vassouras

Gabriel Montes, Fabiana da Silva, April 2021, Journal of Economic Studies, “Effects of Economic Policy Uncertainty and Political Uncertainty on Business Confidence and Investment.” https://www.emerald.com/insight/content/doi/10.1108/JES-12-2020-0582/full/html

1. Introduction

The literature on business confidence is vast. If on the one hand some studies indicate that business confidence acts as a leading indicator of macroeconomic activity and influences the economic environment, on the other hand, some studies investigate the determinants of business confidence (Khan and Upadhayaya, 2020).

Although many advances have been made, the literature on the determinants of business confidence continues to evolve. Some studies analyze not only the effects of macroeconomic variables, but also the effects of other variables able to create (or reduce) uncertainties, such as corruption (Montes and Almeida, 2017) and monetary policy credibility (Montes, 2013; de Mendonça and Almeida, 2019). These studies reveal that low credibility and high levels of corruption reduce confidence due to the uncertainties that emerge.

Uncertain economic scenarios created by economic policy uncertainty undermine confidence, and affect the decision making of entrepreneurs, who, for example, postpone investment and employment decisions in order to gain more information (Bloom et al., 2018). Regarding the definition of economic policy uncertainty, Al-Thaqeb and Algharabali (2019) points out that “Policy uncertainty is the economic risk associated with undefined future government policies and regulatory frameworks” (Al-Thaqeb and Algharabali, 2019, p. 2). Baker et al. (2016) and Al-Thaqeb and Algharabali (2019) suggest that economic policy uncertainty delay economic recoveries during periods of recession as businesses and households postpone their decisions about investment and consumption expenditures due to market uncertainty. Nevertheless, regarding the effects of economic policy uncertainty on research and development (R&D) expenditures and innovation outputs, Tajaddini and Gholipour (2020) find positive relationships for a set of 19 developed and developing countries, thus, contradicting those that claim a negative association between economic policy uncertainty and R&D expenditure.

Since the work of Bloom (2009), and due to existing controversies in the literature, studies investigate the effects of uncertainty shocks on different economic variables (e.g., Baker et al., 2016; Bachmann et al., 2013; Colombo, 2013; Nodari, 2014; Donadelli, 2015; Gulen and Ion, 2015; Moore, 2017; Istiak and Serletis, 2018; Bahmani-Oskooee and Nayeri, 2018; Bahmani- Oskooee et al., 2018; Mumtaz and Surico, 2018; Gholipour, 2019; Greenland et al., 2019; Istiak and Alam, 2019, 2020; Tajaddini and Gholipour, 2020). In general, the findings suggest that macroeconomic variables such as GDP, investment and employment are adversely affected by increased economic policy uncertainty.

The political environment is also a source of uncertainty that affects the economy. Studies provide evidence that the instability of the political environment has negative effects on the economic environment (e.g., Barro, 1991; Alesina and Perotti, 1996; Svensson, 1998; Carmignani, 2003; Aisen and Veiga, 2006, 2013; Durnev, 2010; Zouhaier and Kefi, 2012; Julio and Yook, 2012; Uddin et al., 2017; Azzimonti, 2018; Jens, 2017). These studies show that political instability has negative effects on inflation, GDP and unemployment.

Political uncertainty reflects instabilities on the political scene (i.e., involving politicians). The instabilities arising from the political scenario are associated to uncertainties regarding possible changes in the “rules of the game” and in the functioning of institutions. Hence, the uncertainty related to the political system is a key feature affecting the business environment, which entrepreneurs must consider when deciding, for instance, to start or expand their businesses. The effects of political uncertainty are stronger when firms and politicians have close connections and political favors might be at play.

One can suggest economic policy uncertainty reduces entrepreneurs’ optimism about the future of the economy and their business. Similarly, an uncertain political environment can deteriorate business confidence, producing negative effects on the economic environment. Hence, some important questions arise. Does political uncertainty affect business confidence? Is business confidence affected by economic policy uncertainty? Are political uncertainty and economic policy uncertainty transmitted to investment decisions through business confidence? These questions are particularly important for developing countries since these countries often present higher levels of political uncertainty and economic policy uncertainty.

#### Confidence is key to an economic recovery.

Boone 20 – Dr. Laurence, PhD in Economics from London Business School, OECD Chief Economist, Master Degree in Econometrics from the University of Reading, MAS in Modelization and Quantitative Analysis from Paris X-Nanterre University.

Laurence Boone, “Building Confidence Crucial Amid An Uncertain Economic Recovery”, OECD Interim Economic Report, 9/16/2020, https://www.oecd.org/newsroom/building-confidence-crucial-amid-an-uncertain-economic-recovery.htm

With the COVID-19 pandemic continuing to threaten jobs, businesses and the health and well-being of millions amid exceptional uncertainty, building confidence will be crucial to ensure that economies recover and adapt, says the OECD’s Interim Economic Outlook.

After an unprecedented collapse in the first half of the year, economic output recovered swiftly following the easing of containment measures and the initial re-opening of businesses, but the pace of recovery has lost some momentum more recently. New restrictions being imposed in some countries to tackle the resurgence of the virus are likely to have slowed growth, the report says.

Uncertainty remains high and the strength of the recovery varies markedly between countries and between business sectors. Prospects for an inclusive, resilient and sustainable economic growth will depend on a range of factors including the likelihood of new outbreaks of the virus, how well individuals observe health measures and restrictions, consumer and business confidence, and the extent to which government support to maintain jobs and help businesses succeeds in boosting demand.

The Interim Economic Outlook projects global GDP to fall by 4½ per cent this year, before growing by 5% in 2021. The forecasts are less negative than those in OECD’s June Economic Outlook, due primarily to better than expected outcomes for China and the United States in the first half of this year and a response by governments on a massive scale. However, output in many countries at the end of 2021 will still be below the levels at the end of 2019, and well below what was projected prior to the pandemic.

If the threat from COVID-19 fades more quickly than expected, improved business and consumer confidence could boost global activity sharply in 2021. But a stronger resurgence of the virus, or more stringent lockdowns could cut 2-3 percentage points from global growth in 2021, with even higher unemployment and a prolonged period of weak investment.

Presenting the Interim Economic Outlook, covering G20 economies, OECD Chief Economist Laurence Boone said: “The world is facing an acute health crisis and the most dramatic economic slowdown since the Second World War. The end is not yet in sight but there is still much policymakers can do to help build confidence.”

She added: “It is important that governments avoid the mistake of tightening fiscal policy too quickly, as happened after the last financial crisis. Without continued government support, bankruptcies and unemployment could rise faster than warranted and take a toll on people’s livelihoods for years to come. Policymakers have the opportunity of a lifetime to implement truly sustainable recovery plans that reboot the economy and generate investment in the digital upgrades much needed by small and medium-sized companies, as well as in green infrastructure, transport and housing to build back a better and greener economy.”

### Biz Con---AT: Low Now---2NC

#### Business confidence is recovering.

Rogers 5-4 – Kate, correspondent at CNBC and B.A in journalism from the University of Delaware.

Kate Rogers, 5-4-23, “Small business confidence rises slightly, but inflation, economic concerns dim outlook”, CNBC, https://www.cnbc.com/2023/05/04/small-business-confidence-up-but-inflation-concerns-linger.html

While the mood on Main Street has brightened, concerns about the economy, stubborn inflation and the banking system are weighing on small business owners, according to the latest quarterly survey from CNBC and Momentive.

Small business confidence for the second quarter rose slightly to 46 from 45 in the first quarter, though that still remains below the baseline for optimism. Forty percent of owners describe their current business conditions as good, up from 34% in the first quarter and nearly half (46%) say they project revenue to increase in the next year.

But just 21% say they’d describe the economy as good or excellent — less than half of those that described the economy as “poor” (44%), as challenges continue with inflation and the ongoing labor crunch.

The CNBC|SurveyMonkey Small Business Survey was conducted from April 17 through April 24 among more than 2,200 small business owners across the country using Momentive’s platform.

#### Confidence is up and investment is increasing, assumes inflation and worker shortages.

Petrik 5-4 – Anne, vice president of research at Vistage Worldwide Inc.

Anne Petrik, 5-4-2023, "Small Business Confidence Holds Despite Recession Concerns", Vistage Research Center, https://www.vistage.com/research-center/business-financials/economic-trends/20230504-small-business-confidence-holds-wsj-survey/

Title: Small business confidence holds amid recession concerns

Despite positive — albeit slowing — growth in GDP and inflation rates easing, concerns about a recession are on the rise among small businesses. The proportion of small businesses that are moderately or extremely concerned about the impacts of a recession increased from 46% last month to 54% this month. It’s also interesting to note that while recession concerns are on the rise, overall confidence about the economy did not slip further. In fact, pessimism about the national economy eased compared to last month, which led to the WSJ/Vistage Small Business CEO Confidence Index remaining nearly flat at 79.0 compared to last monthly 79.8.

The bigger driver of the decline in the Small Business Index is cost management; the proportion of small businesses planning to increase workforce size or fixed investments in the next 12 months fell to lows comparable to August 2020.

Expansion plans of small businesses less aggressive

While the proportion of small businesses who plan to increase fixed investments inched up 2 percentage points from last month, the last 2 months have recorded lows not seen since the pandemic summer of 2020. The April survey revealed that just 30% plan to increase fixed investments, while 51% expect theirs will remain the same. For fixed investments to remain unchanged even as prices continue to increase equates to a lower volume.

#### It’s surviving inflation and banking crises but the margins are narrow.

CNBC SBS 5-4 – CNBC/SurveyMonkey Small Business Survey, is a quarterly survey of over 2000 business owners across the United States to assess overall confidence in the economy.

CNBC/SurveyMonkey Small Business Survey, 5-4-2023, “Small business confidence rises slightly despite continued inflation concerns and negative views of the economy: CNB”, https://www.cnbc.com/2023/05/04/small-business-confidence-rises-slightly-despite-continued-inflation-concerns-and-negative-views-of-the-economy-cnbcsurveymonkey.html

In the wake of the recent regional bank crisis, the second quarter survey, conducted April 17-24, 2023, finds that small businesses continue to rely on large banks even as confidence in the banking sector overall is showing signs of vulnerability. Forty percent of small business owners say they do their business banking with a large bank, rather than a regional bank (31%) or a community bank (32%), and small business owners are split evenly between those who express confidence in America’s banking system (49%) and those who do not (50%). Despite the significant deposit withdrawals in recent months, most small business owners (71%) are not likely to open a new bank account for their business in the next six months, and almost half (43%) say they’re moving money from one account to another about as frequently as they were a year ago. A majority (62%) of small business owners also say they are confident that their business capital is secure, but less (53%) say it is easy for them to access the capital needed for their business to operate.

The survey highlights that inflation remains top of mind for small business owners, with almost half (41%) saying inflation is the biggest risk to their business right now, above other concerns such as labor shortage (17%) and supply chain disruptions (15%). Almost all small business owners (91%) express worry about inflation and only about one-third (31%) express confidence in the Federal Reserve’s ability to combat inflation; both statistics are unchanged from last quarter.

Overall, the Small Business Confidence Index, a number based on responses to eight questions in the survey, rose slightly to a score of 46 in Q2 2023, one point higher than last quarter and four points higher than the all-time low of 42. Forty percent of small business owners now say current conditions for their business are good, up from 34% last quarter, and almost half (46%) expect their business’s revenue to increase in the next 12 months, up from 43% in Q1. Even though current conditions are viewed as more positive, overall views of the economy are dim with only 3% rating the current state of the economy as excellent, and many more considering it to be fair (34%) or poor (44%).

“Most–but far from all–small business owners are confident their business capital is secure, and only half express confidence in the overall American banking system,” says Laura Wronski, director of research at Momentive. “Even if the recent shake-up of the banking industry is behind us, small business owners’ haven’t yet changed their standard operations to reflect those jitters.”

Each quarter, CNBC and SurveyMonkey poll over 2,000 small business owners aiming to measure the vitality of the American economy as well as the view from Main Street on jobs, taxes, and other hot topics. In addition to measuring small business confidence nationwide, the large sample size gives CNBC and SurveyMonkey the power to uncover trends by geographic region and among specific small business cohorts.

## Link---Crowd-Out

### Crowd-Out---JG = Crowd Out---2NC

#### The crowd-out effects are huge.

Ozimek 18 – Adam,Chief Economist at the Economic Innovation Group, senior economist at Moody’s Analytics, PhD in Economics from Temple University.

Adam Ozimek, 4-24-2018, "Yes, The Jobs Guarantee Is Absurd", Forbes, https://www.forbes.com/sites/modeledbehavior/2018/04/24/yes-the-jobs-guarantee-is-absurd/?sh=57f3cb07afd0

Despite these generous benefits, they estimate this program will only require hiring about 10 million workers, all of whom are currently unemployed. While they admit "the job guarantee may result in the displacement of some workers currently employed in the private sector, especially at the low end of the labor market", they minimize this risk by pointing to the minimum wage literature. As such, their cost estimates don't assume any crowd out of private employers. Does that sound reasonable to you?

They believe their program will prompt tens of millions of employers to raise wages, but this won't cause any disemployment or crowd out at private employers. By their own estimate, their program "may result in a comparable change within the labor market" as a $15 minimum wage, which affects 41 million workers. To believe there would be no crowd out despite this massive change requires the assumption every low wage worker in this country has productivity high enough to justify a good paying job, but employers aren't paying it now.

Usually, liberal commentators are quick to tell us how bad low wage jobs are in the U.S. not just by pay but by working conditions. Wage theft, unpredictable hours, abusive bosses, tenuous employment at will, lack of opportunities for advancement are all allegedly widespread features of the low-skilled labor market. Are we to believe that workers will not abandon these jobs in droves for guaranteed government employment with benefits, or that employers will change overnight? I think these criticisms of working conditions are often overblown, but at the very least you can certainly easily be fired from a private sector job and turnover is quite high, making a guaranteed job clearly nicer in that important regard. And yes, many low-skilled jobs are far from pleasant. The idea employers would and could universally raise wages, offer full benefits, and upgrade job quality to prevent crowd out strikes me as absurd.

For many advocates I think this risk isn't worth worrying about because it's not much of a risk to them. If the job guarantee ends up with 20, 30, or 40 million instead of the 10 million they expect than that's not really a problem because massively expanding the size of government isn't really a big deal. But it would be.

#### There are massive incentives for companies to circumvent the process and no way to prevent crowd-out.

Ozimek 17 – Adam,Chief Economist at the Economic Innovation Group, senior economist at Moody’s Analytics, PhD in Economics from Temple University.

Adam Ozimek, 5-28-2017, "Guaranteeing Everyone A Job Is Harder Than It Sounds", Forbes, https://www.forbes.com/sites/modeledbehavior/2017/05/28/guaranteeing-everyone-a-job-is-harder-than-it-sounds/?sh=264999965b32

Unless I am missing something -and I could be- the proposal is extremely light on details yet also extraordinarily broad. The plan lists several jobs that apparently are a good fit for the currently non-working and also in high demand: home care workers to aid the aged and disabled, affordable child care, teachers’ aides, and EMTs. So the basic plan, if I understand it correctly, is that the federal government will pay for jobs for people to work in the public or private sector, and the government will also pay for training as needed.

Crowd out is obviously a big problem here. Will the employers being paid to create these “guaranteed jobs” actually create new jobs or just replace existing ones? Or perhaps they will "create new jobs" that were going to be created anyway. How will this be monitored, and how are we going to micromanage the number of employees at these firms and local government entities in perpetuity?

#### Tens of millions would be employed in unproductive jobs which would destroy the economy.

Ozimek 18 – Adam,Chief Economist at the Economic Innovation Group, senior economist at Moody’s Analytics, PhD in Economics from Temple University.

Adam Ozimek, 3-23-2018, "Which Radical Liberal Policy Proposal Is Worse?", Forbes, https://www.forbes.com/sites/modeledbehavior/2018/03/23/which-radical/?sh=5b299f64383a

The jobs guarantee, on the other hand, is so much worse. It would effectively nationalize a quarter of the labor market, and force the government to manage putting all those people to work. It combines the massive and radical scale of the UBI with a ridiculous bureaucratic requirement. It would drastically change the nature of the U.S. economy.

One of the better takedowns I've written comes from Matt Bruenig, a socialist who is hardly a free market ideologue. Here is how he concludes his fairly devastating piece:

Whether such people are usefully employed in any meaningful respect is a different thing altogether and the idea that thousands of administrations across the country will be able to usefully employ random flows of labor with random sets of skills in random durations is fairly implausible. This is not a knock on the bureaucracy. The top business geniuses in the country would struggle to run an enterprise like that.

### Crowd-Out---JG = Crowd Out---AT: Tchnerva---2NC

#### The report assumes no crowd-out and underestimates participation because its findings are based on an uncommonly low unemployment rate. BUT the report concludes the link is still huge.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

The Levy report sees the program wage as a “de facto minimum wage” for the entire economy, forcing private sector employers in most circumstances to match it. The CBPP report notes that forty-one million workers currently earn less than fifteen dollars per hour. Both reports assume no more than a trivial amount8 of those workers would enroll in a job-guarantee program. This reflects the belief by advocates of a higher minimum wage that it would not cause significant job losses, even with a radical doubling to fifteen dollars per hour.9

A survey of the literature on minimum wage and employment by Neumark and Wascher (2007) reports that a “sizable majority” of studies found negative employment effects from minimum-wage hikes, and that “the studies that focus on the leastskilled groups that are likely most directly affected by minimum wage increases provide relatively overwhelming evidence of stronger disemployment effects for these groups.” If even a few percent of the workers currently earning under fifteen dollars per hour either lost their jobs or simply chose to enroll, projected participation would increase by millions.

Both reports also project their programs’ enrollees based on very recent unemployment, underemployment, and discouraged-worker data. These numbers are nearing twenty-year lows. The large impact higher unemployment could have on participation, raising the cost and other burdens we discuss below, can best be seen in chart 2, which graphs the U-6 rate on which the CBPP report bases its projected enrollees from the series’ inception in 1994 until the present.

The U-6 rate that generates the CBPP report’s baseline projection of 10.7 million enrollees (8.2 percent) is very close to the low end of the data series over the time in which it has been collected. The all-time low U-6 rate of 6.3 percent in mid2000 would have yielded a projection of 7.7 million enrollees, but peaks of unemployment associated with the early 2000s recession and 2008 financial crisis would yield projections of 15.2 million and 26.4 million enrollees, respectively.10

The grave concerns we raise in the upcoming sections about a job guarantee’s cost, logistics, and footprint on the wider economy all stem from its massive size. While we believe both reports have underestimated that size, we will primarily use the authors’ own size estimates in the analyses that follow. To the extent that they indeed underestimate program size, the harms we discuss would likely be even greater.

### Crowd-Out---Turns Case---2NC

#### Crowd-out turns the inequality advantage---disproportionately reduces investment in poorer regions.

Bourne 18 - Ryan, R. Evan Scharf Chair for the Public Understanding of Economics at Cato, head of public policy at the Institute of Economic Affairs, MPhil in economics from the University of Cambridge.

Ryan Bourne, 4-24-18, "A Jobs Guaranteed Economic Disaster", Cato Institute, https://www.cato.org/blog/jobs-guaranteed-economic-disaster

This crowd‐out is likely to be particularly acute in low productivity regions, and (ironically) after economic downturns. A nationwide jobs guarantee program paying $15 an hour will be particularly attractive to workers in low wage regions, and by setting a de facto wage floor the program will prevent private investment in regions on the basis of cheap labor.

Though no doubt there would be some demand spillovers from well‐paid jobs, the net consequence is highly likely to be weaker private sector job creation in poor regions, which has been the experience of countries such as Britain with a nationwide minimum wages and public sector national pay bargaining. Proponents of the scheme see “higher labor standards” as a good thing, but absent productivity improvements, policies which raise labor costs significantly will reduce the quantity of workers demanded.

### Crowd-Out---AT: Government Jobs Solve---2NC

#### Efficiency---government is inefficient, decreasing per-worker productivity even if employment increases.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

Neither report takes account of harm to the private sector caused by their proposals. In addition to the de facto minimum wage and benefits set by a job guarantee, one must consider the contraction in private labor supply that would result if a sizable fraction of the many millions of currently employed workers at the lower end of the wage distribution chose to leave their jobs and enroll in the federal program.

The immediate result of more pay and benefits for the working poor is something everyone would like to see, all else equal. But the process would divert workers from the places in the economy where they are most productive to a labyrinthine bureaucracy, where even finding enough work to assign would be a challenge. This could greatly weaken the productivity of the overall economy, potentially leading to declines in output and even greater job loss.

Contrary to the stated goal of not competing with the private sector, some industries could become entirely nationalized. For example, 875,000 home health aides and 1.3 million teachers’ aides currently employed by the private and public sectors earn less on average than proposed jobguarantee wages. One might myopically say these workers deserve a raise, but turning these industries from conventional jobs into tasks assigned on demand would almost certainly result in poorer service to the young and elderly.

#### Worker productivity would fall.

Shambaugh et al 18 – Jay Shambaugh, director of The Hamilton Project and a senior fellow in Economic Studies at the Brookings Institution, a Professor of Economics and International Affairs at the Elliott School of International Affairs at The George Washington University, Member of the White House Council of Economic Advisers (August 2015–January 2017) Ryan Nunn, Policy Director, The Hamilton Project; Fellow, Economic Studies, the Brookings Institution, doctorate in Public Policy and Economics from the University of Michigan, Jimmy O’Donnell.

Ryan Nunn, Jimmy O’Donnell, and Jay Shambaugh, 2018, Labor Market Considerations for a National Job Guarantee, The Brookings Institute, https://www.hamiltonproject.org/wp-content/uploads/2023/01/JobGuarantee\_FP\_web\_20190206.pdf

Second, and more importantly, a job guarantee might lower the productivity of a given worker. Because the administrative allocation of workers would likely not match peoples’ talents with occupations as well as a market allocation would, individuals would quite likely find themselves creating less output per hour than if they had found employment outside of the job guarantee program. The size of this productivity reduction would depend on the ability of the job guarantee program administrators to match participants with productive employment. During downturns in private labor demand, when the program would likely be flooded with applicants, it seems unlikely that workers would be well-matched in all cases. However, if the alternative for many workers is not private employment, but rather nonemployment, then output per capita could still be higher with a job guarantee.

A related concern is that a large number of people might stay in relatively unproductive guaranteed jobs for long periods of time. In these cases, they will almost certainly be less productive than if they were allocated by a labor market to their best-matched employment option. Thus, a significant concern for job guarantee programs that are large enough and well-paying enough to draw people from the private sector is the negative effect they would have on productivity, which has clear negative implications for living standards. Conversely, the more targeted a program is—i.e., the more limited a program is to individuals who are unemployed or not wellutilized in the private labor market—and the more emphasis that is placed on training and eventually transitioning people to the private labor market, the less one would be concerned about deleterious productivity implications.

#### High Skilled Workers---Re-employing lower-skilled workers displaces workers who wouldn’t be employed by the jobs guarantee. That wrecks productivity.

Ozimek 18 – Adam,Chief Economist at the Economic Innovation Group, senior economist at Moody’s Analytics, PhD in Economics from Temple University.

Adam Ozimek, 4-24-2018, "Yes, The Jobs Guarantee Is Absurd", Forbes, https://www.forbes.com/sites/modeledbehavior/2018/04/24/yes-the-jobs-guarantee-is-absurd/?sh=57f3cb07afd0

The first problem is you lose the output those workers were producing. In that sense, their production is nationalized quite like when the government takes over an industry, except in this case they are taking over the labor instead of the capital. What's more, when employers of low skilled workers go out of business this will also harm the high skilled workers they employ.

#### Under-employment---local governments wouldn’t create enough jobs to offset crowd-out because they’re under-funded.

Ozimek 18 – Adam, Chief Economist at the Economic Innovation Group, senior economist at Moody’s Analytics, PhD in Economics from Temple University.

Adam Ozimek, 5-28-2017, "Guaranteeing Everyone A Job Is Harder Than It Sounds", Forbes, https://www.forbes.com/sites/modeledbehavior/2017/05/28/guaranteeing-everyone-a-job-is-harder-than-it-sounds/?sh=264999965b32

The incentive to crowd out is strong for local government especially. The CAP piece justifies the demand by pointing out that many local governments are “cash strapped”. And they are, in part thanks to underfunded pensions. But they ignore how eager these cash strapped local governments will be to save money by employing fewer workers.

#### Human Capital Investment---the plan would kill it by reducing incentives to pursue higher education.

Shambaugh et al 18 – Jay Shambaugh, director of The Hamilton Project and a senior fellow in Economic Studies at the Brookings Institution, a Professor of Economics and International Affairs at the Elliott School of International Affairs at The George Washington University, Member of the White House Council of Economic Advisers (August 2015–January 2017) Ryan Nunn, Policy Director, The Hamilton Project; Fellow, Economic Studies, the Brookings Institution, doctorate in Public Policy and Economics from the University of Michigan, Jimmy O’Donnell.

Ryan Nunn, Jimmy O’Donnell, and Jay Shambaugh, 2018, Labor Market Considerations for a National Job Guarantee, The Brookings Institute, https://www.hamiltonproject.org/wp-content/uploads/2023/01/JobGuarantee\_FP\_web\_20190206.pdf

Effect on Human Capital Investments In choosing between school enrollment and employment, and in choosing among different employment options, individuals must take into account the different career paths that would result from the various options. Choosing to enroll in school reflects a judgment that the future wage gains generated by increased human capital (and any nonwage benefits of schooling) exceed the opportunity cost of tuition and forgone earnings. Similarly, some jobs confer experience and training (or prospects for internal advancement) that is especially valuable, and that may compensate for lower wages (PostelVinay and Robin 2002).

A job guarantee could have different types of effects on workers’ long-term career outcomes. On the one hand, a guaranteed job might attract individuals who would otherwise have obtained more schooling: by making it easier to immediately obtain employment, a job guarantee lowers the appeal of school enrollment. An empirical literature has examined this effect in the context of minimum wage laws, which may reduce school enrollment to an extent (Neumark and Wascher 2007). In a very different context, the recent surge in oil and gas extraction and associated increase in labor demand for low-skilled workers raised the male high school dropout rate by 0.3 percentage points in the average labor market with shale reserves (Cascio and Narayan 2015).

#### That decimates economic growth.

Pelinescu 15 – Elena Pelinescu, Institute for Economic Forecasting, Romanian Academy, Calea

Elena Pelinescu, 2015, The impact of human capital on economic growth, Procedia Economics and Finance 22 ( 2015 ) 184 – 190, https://www.sciencedirect.com/science/article/pii/S2212567115002580

There is a large body of literature, that has revealed that one of the most important factors of economic growth is human capital (Riley, 2012 Lucas, 1988, Mankiw et al., 1992, De la Fuente and Doménech, 2000, 2006) with regard to both the effect of level (so called level effect) by its decisive influence on production through labor productivity (Romer, 1990; Mankiw, Romer and Weil, 1992) and the rate effect by contributing to increased competitive advantage through innovation and diffusion technology (Pistorius, 2004 Siggel, 2000, 2001, Horwitz, 2005).

In the classical theory of economic growth, labor productivity is regarded as an exogenous factor which depends on the ratio between workforce and physical capital, plus other factors (technical progress), but the beneficial effect of education on potential growth of productivity is not taken into calculation. The new theory of economic growth developed in the early 80s comes to correct this shortcoming of the classical theory emphasizing the importance of education and innovation, (elements of human capital) in long-term economic growth. In contrast to this, the theory of market value, shows that studies have highlighted the influence of intangible assets such as research and development, patents, intellectual capital on the market value of companies and also on their development, leading ultimately to economic growth overall national, regional or global, as the new growth theory shows.

De la Fuente and Doménech (2000, 2006) studied the relationship between production and human capital, both in level and in first-order differences, shows a positive and significant statistical correlation (demonstrated by the Temple, 1999). Bassanini and Scarpetta (2001) revealed in a series of OECD data for the period 1971 to 1998 that increased duration of schooling by one year leads to an increase in GDP per capita by 6%. Benhabib and Spiegel (1994) have shown that the introduction of human capital as a factor of production by function type Coob -Douglas leads to its insignificant effect on growth of GDP per capita, but if taken into account the influence of human capital on total factor productivity, the effects are visible in two aspects: a) human capital influences the internal rate of innovation as evidenced by Romer (1990); b) human capital influences the rate of diffusion of technology in the spirit demonstrated by Nelson and Phelps (1966). They show that an increase of 1% of the capital stock leads to a 0.13% increase in the rate of growth and the process of catching up technological development of other countries is strongly influenced by human capital stock nationwide as demonstrated by the Funke and Strulik (2000).

Michael Funke, Holger Strulik (2000), using a model that incorporates aspects of the classical theory of economic growth with the new theories of economic growth emphasize the existence of different effects of human capital in the stage of development of the country. In their view, the model provided by Uzawa-Lucas may explain the development mechanisms if productivity in the accumulating knowledge is sufficiently high, but GrossmanHelpman model for an economy with a wide variety of products can be explained considering technological growth as endogenous factor, which involve significant expenditure on research and development. Physical capital contributes greatly to the growth income per capita in the early stages of development, when the accumulation of knowledge through continuing education and training move to higher stages of development.

Bundell and others (1999) analyzing the impact of human capital on economic growth believe that the growth rate of output depends on the rate of accumulation of human capital and innovation, whose source is the stock of human capital, education level influence labor productivity. For supporting of these ideas they quoted passage: a) the work of Griliches (1997) which showed that in the US in 50 years the change in the level of education of the labor force led to a 33% increase in productivity; b) Jenkins (1995), which revealed that during 1971-1992, a 1% share breeding of highly skilled workers has led to an increase of 0.42 to 0.63% of annual output in the UK; c) OECD record from the 60s that have experienced rapid growth as a result of increasing the number of highly educated; Englander and Gurney (1999) which showed that growth in OECD countries from 70% in 1960 to 95% in 1985 of school enrolment has led to an increase of 0, 6% per year in labor productivity (Bundell and others, 1999, p.16-17).

### Crowd-Out---AT: Gov Efficient---2NC

#### Corruption means inefficient companies employ all the workers, reducing productivity.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

6.3 Rent-Seeking and Corruption

A federal job guarantee, no matter how well intentioned, would also serve as a magnet for corruption and corporate influence peddling. Especially when administered on a local level, the opportunities for corruption become vast and difficult to monitor. For example, one need not be particularly imaginative to see opportunities for a local building contractor to get free labor by giving kickbacks to officials in charge of placing enrollees in jobs.

Corporations and other interest groups do not have to resort to corruption per se to gain control of the millions of subsidized laborers in a job guarantee. Rent-seeking, where corporations or other incumbent interests compete for influence over government to further their own objectives, is a well-known phenomenon.28

For example, the regional manager for Walmart might get in touch with a local government about the condition of its store’s parking lot and the grounds around it. Sales have been falling, and this expense might tip the decision to move to a new location in the next town. Couldn’t the town provide some of its laborers to improve the look of the store’s grounds?

Where there is free labor to be had, private businesses come knocking. Both with and without breaking the law, influence peddling would be an inevitable consequence of a job guarantee.

#### Administering the program would be impossible and inefficient.

Economist 18 - newspaper printed that focuses on current affairs, economics, international business, politics, technology

The Economist, 5-10-2018, "A jobs guarantee is a flawed idea", Economist, https://www.economist.com/united-states/2018/05/10/a-jobs-guarantee-is-a-flawed-idea?fsrc=scn%2Ftw%2Fte%2Frfd%2Fpe

The policy’s supporters compare it to the minimum wage, which they say has not much dented employment even when set high. But that has typically been in rich cities. Were the terms of employment as generous as Mr Booker wants across the country, the impact on the government payroll could be huge. About half of America’s 148m workers earn less than $15 per hour. In some southern and south-western states, the figure is almost 60% (see chart).

That would not be a problem, were the government capable of productively employing tens of millions of new workers. Supporters of the policy envisage armies of labourers erecting infrastructure, caring for children and cleaning up the environment. Yet some of these jobs are skilled. Others are unsuitable for a programme that would face high turnover in a strengthening economy, and sudden influxes during recessions. In any case, it is hard to imagine the government operating the programme efficiently, even if the job of running projects were delegated to states, as proposed by the Centre on Budget and Policy Priorities (CBPP) a left-leaning think-tank. Government at all levels employs 22.3m Americans. Even if the CBPP’s estimate of take-up of about 10m is right, it would represent nearly a 50% expansion of the government payroll. It is not clear whether these workers could be sacked if they performed poorly.

## Link---Inflation

### Inflation---Kills Econ---2NC

#### Inflation kills growth.

NBER 97 – The National Bureau of Economic Research is an American private nonprofit research organization "committed to undertaking and disseminating unbiased economic research among public policymakers, business professionals, and the academic community".

NBER, 1997, "Does Inflation Harm Economic Growth?", The Digest: No. 12, December 1997 https://www.nber.org/digest/dec97/does-inflation-harm-economic-growth

Since 1984, inflation control has become the unquestioned mantra of economic policymakers worldwide. Even a whisper of "the I-word" by Alan Greenspan in the financial press creates havoc in global stock markets. Based in part on the 1973 to 1984 period of macroeconomic distress experienced by OECD countries, when inflation reached an average rate of 13 percent, monetary policymakers have assumed that faster sustainable growth can only occur in a climate where the inflation monster is tamed.

Unfortunately, there has been a shortage of research conducted to support this intuitive belief. In an attempt to correct this, an NBER Working Paper by Javier Andrés and Ignacio Hernando analyzes the correlation between growth and inflation in OECD countries during the 1960-92 period. In Does Inflation Harm Economic Growth? Evidence for the OECD (NBER Working Paper No. 6062), Andrés and Hernando find that even low or moderate inflation rates (as we have witnessed within the OECD) have a temporary negative impact on growth rates, leading to significant and permanent reductions in per capita income. A reduction in inflation of even a single percentage point leads to an increase in per capita income of 0.5 percent to 2 percent.

As the authors point out, their analysis leaves little room for interpretation. Inflation is not neutral, and in no case does it favor rapid economic growth. Higher inflation never leads to higher levels of income in the medium and long run, which is the time period they analyze. This negative correlation persists even when other factors are added to the analysis, including the investment rate, population growth, schooling rates, and the constant advances in technology. Even when the authors factor in the effects of supply shocks characteristic of a part of the analyzed period, there is still a significant negative correlation between inflation and growth.

Inflation not only reduces the level of business investment, but also the efficiency with which productive factors are put to use. The benefits of lowering inflation are great, according to the authors, but also dependent on the rate of inflation. The lower the inflation rate, the greater are the productive effects of a reduction. For example, reducing inflation by one percentage point when the rate is 20 percent may increase growth by 0.5 percent. But, at a 5 percent inflation rate, output increases may be 1 percent or higher. It is therefore more costly for a low inflation country to concede an additional point of inflation than it is for a country with a higher starting rate. Given their detailed analysis, the authors conclude that "efforts to keep inflation under control will sooner or later pay off in terms of better long-run performance and higher per capita income."

#### Higher inflation causes the fed to spike interest rates.

Summers 18 – Lawrence, Charles W. Eliot University Professor and President Emeritus at Harvard University. Secretary of the Treasury for Clinton and the Director of the National Economic Council for Obama.

Larry Summers, 7-3-18, "A jobs guarantee", https://larrysummers.com/2018/07/03/a-jobs-guarantee-progressives-latest-big-idea/

The United States has large needs, for example in infrastructure and care of the aged. At the federal level, these are met through contracting, not direct hiring. Using an employment guarantee to address these national problems would require significant restructuring of the way services are provided, likely with an efficiency cost.

A final question concerns the macroeconomics of a jobs guarantee. If the Federal Reserve saw the budget deficit expanding substantially, a tightening of the labor market or upward pressure on wages, it would probably respond by raising interest rates significantly. This would discourage spending and offset the employment gains from a guarantee scheme. If, on the other hand, the program was financed with new taxes, demand from those who paid the taxes would go down. That would reduce private-sector employment and offset the gains from an employment guarantee.

#### That causes a deep recession.

Rugaber 2-24 – Chris, Economics reporter with the Associated Press, M.A in political science from American University.

Chris Rubager, 2-24-2023, "Federal Reserve rate hikes likely to cause a recession, research says", PBS NewsHour, https://www.pbs.org/newshour/economy/federal-reserve-rate-hikes-likely-to-cause-a-recession-research-says

When inflation soars, as it has for the past two years, the Fed typically responds by raising interest rates, often aggressively, to try to cool the economy and slow price increases. Those higher rates, in turn, make mortgages, auto loans, credit card borrowing and business lending more expensive.

But sometimes inflation pressures still prove persistent and require ever-higher rates to tame. The result — steadily more expensive loans — can force companies to cancel new ventures and cut jobs and consumers to reduce spending. It all adds up to a recipe for recession.

And that, the research paper concludes, is just what has happened in previous periods of high inflation. The researchers reviewed 16 episodes since 1950 when a central bank like the Fed raised the cost of borrowing to fight inflation, in the United States, Canada, Germany and the United Kingdom. In each case, a recession resulted.

### Inflation---Kills Econ---AT: Rate Hike Now---2NC

#### The fed won’t raise interest rates now.

Rugaber 5-4 – Chris, Economics reporter with the Associated Press, M.A in political science from American University.

Christopher Rugaber, 5-4-2023, "Fed raises key rate but hints it may pause amid bank turmoil", AP NEWS, https://apnews.com/article/federal-reserve-inflation-interest-rate-hikes-recession-aba096229d327d8abeb4bc13d85d1b2b

WASHINGTON (AP) — The Federal Reserve reinforced its fight against high inflation Wednesday by raising its key interest rate by a quarter-point to the highest level in 16 years. But the Fed also signaled that it may now pause its streak of 10 rate hikes, which have made borrowing for consumers and businesses steadily more expensive.

In a statement after its latest policy meeting, the Fed removed a sentence from its previous statement that had said “some additional” rate hikes might be needed. It replaced it with language that said it will now weigh a range of factors in “determining the extent” to which future hikes might be needed.

Speaking at a news conference, Chair Jerome Powell said the Fed has yet to decide whether to suspend its rate hikes. But he pointed to the change in the statement’s language as confirming at least that possibility.

Having raised their key short-term rate by a substantial 5 percentage points since March 2022, Powell said, Fed officials can step back and assess the impact of higher rates on growth and inflation. He said the Fed would also monitor other factors, including the turmoil in the banking sector, to determine whether to pause its rate hikes. In doing so, he said, the central bank would set its rate policy on a meeting-to-meeting basis.

The Fed chair stressed his belief that the collapse of three large banks in the past six weeks will likely cause other banks to tighten lending to avoid similar fates. Such lending cutbacks, he added, will likely help slow the economy, cool inflation and lessen the need for the Fed to further raise rates.

### Inflation---AT: Inflation Now---2NC

#### Inflation is slowing: CPI index and the labor market.

Burns 4-12 – Tobias, economics reporter for The Hill focusing on US tax policy.

Tobias Burns, 4-12-2023, "Five takeaways from the March inflation slowdown", Hill, https://thehill.com/business/3946300-five-takeaways-from-the-march-inflation-slowdown/

The consumer price index (CPI) fell to a 5 percent annual increase in March from 6 percent in February, the Labor Department reported Wednesday, dropping a full percentage point as prices for goods ranging from fresh produce to automobiles became cheaper.

That’s the lowest level of annual consumer inflation since May 2021. Prices have been coming down since last June, when they topped out at a 9.1 percent annual increase.

The Federal Reserve has been slowing economic activity and pushing the economy toward a recession in response to higher prices, but the significant progress in Wednesday’s price report is likely to produce some diverging opinions among central bankers. Fed leaders were already torn over whether the bank should move ahead with rate increases or pause after a historically swift hiking campaign.

Here are five takeaways from Wednesday’s encouraging price report.

Prices have been falling despite a hot labor market

Inflation is traditionally associated with higher wages since labor costs represent the largest component of prices. But wages have not kept up with inflation in the current cycle, except for the lowest earners, who have been making more money relative to inflation.

Some economists had been expecting to see a huge uptick in unemployment as inflation comes down, and the Fed is still expecting to see more than one million people put out of work this year, but so far that increase hasn’t happened.

The economy added 236,000 jobs in March and the unemployment rate decreased to 3.5 percent from 3.6 percent as the workforce grew in size, according to the latest jobs report from the Labor Department.

Meanwhile, inflation across various metrics has been coming down, with the personal consumption expenditures (PCE) price index falling to 5 percent and the “core” CPI, which removes energy and food prices, dropping to 5.6 percent from a recent high of 6.6 percent last September.

#### AND it’ll fall further.

Burns 4-12 – Tobias, economics reporter for The Hill focusing on US tax policy

Tobias Burns, 4-12-2023, "Five takeaways from the March inflation slowdown", Hill, https://thehill.com/business/3946300-five-takeaways-from-the-march-inflation-slowdown/

Inflation could fall close to a 2 percent rate this year

Some analysts are sounding very optimistic notes about the trajectory of inflation over the course of the year, arguing it could end up close to the Fed’s 2 percent annual target.

“This report leaves little doubt that the disinflationary process is well underway,” EY chief economist Gregory Daco wrote in an analysis.

“Slower growth in final demand for goods and services, easing housing price inflation and moderate wage growth should combine in the coming month and lead to faster disinflation than expected by the consensus and Fed policymakers.”

#### That matters, inflation thus far has been short-term. Only long-term inflation can hurt growth.

Goedhart 23 - Marc, professor in Corporate Valuation at Erasmus University and a senior expert in corporate finance at McKinsey & Company.

Marc Goedhart, 2-2-2023, "Why you can’t tread water when inflation is persistently high", McKinsey & Company, https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/why-you-cant-tread-water-when-inflation-is-persistently-high

Over the past 12 months, inflation has approached 10 percent in the United States and exceeded double digits in the European Union and the United Kingdom. Central banks—including the US Federal Reserve, which has raised rates at the fastest pace since the 1980s—are responding forcefully, trying to tamp inflation down. There is no clear consensus on how long this period of high inflation will last.

Persistently high inflation presents challenges to value creation that haven’t been seen since the bear markets of the 1970s. Yet the reasons why inflation affects value are often misunderstood. While merely understanding the underlying dynamics does not solve them, achieving greater clarity about the effects of persistently high inflation does make it easier for managers to achieve practicable solutions and to better set their expectations along the way.

Inflation does not significantly affect the cost of capital

Books have been written about value creation. We can distill our definition into one sentence: “Companies that grow and earn a return on capital that exceeds their cost of capital create value.”1 It turns out that inflation does not affect the cost of equity capital very much. In fact, the cost of equity is surprisingly stable in real terms; by observing more than 60 years of US stock market data, we can estimate the forward-looking cost of equity for the stock market as a whole from market P/E ratios, long-term economic growth, and return on capital. Throughout the oil crises of the 1970s, the double-digit inflation of the 1980s, the internet boom and bust, the credit crisis of 2008–09, and the COVID-19 pandemic, the cost of equity has remained at about 7 percent in real terms.2

Of course, the nominal cost of equity capital moves in line with inflation, because it equals the real-term cost of equity plus expected long-term inflation. We found no evidence, however, that investors actually include an additional risk premium in real terms to the cost of capital during times of higher inflation.

Inflation does erode corporate cash flows in real terms

Since the cost of companies’ equity capital is stable in real terms, the challenge shifts next to understanding the effects of inflation on companies’ cash flows. Most companies are unable to effectively pass on to their customers the higher costs they incur. That pressure—expenses increase, but prices to customers can’t increase as much—erodes free cash flow in real terms. Yet the consequences for value creation are not immediately evident from common financial performance indicators, such as operating margin and return on capital. The problem is that accounting doesn’t handle inflation very well: depreciation and amortization tables were built for low-inflation times.

Consider the following example: the (illustrative) financials of a company that started out in year one and two with stable sales, at a constant operating margin (EBITA/sales) of 10 percent, and a constant ROIC of 10 percent. As a result, its free cash flow (FCF) is $100 per year. Projecting unchanged cash flows into perpetuity and using a cost of capital of 10 percent represents a company value of $1,000. However, to remain stable in real terms, the company’s free cash flows must keep pace with inflation (Exhibit 1).

Full inflation pass-on requires increases in return on capital

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Financial professionals will spot the challenge: net property, plant, and equipment (NPPE) and depreciation are based on historical purchase prices and, during high-inflation times, increase at much lower rates than they do in periods of lower inflation.3 If a company can’t fully pass on these expenses, free cash will suffer. Merely treading water on operating margins means that a company drifts backward; to keep up, it needs to (in this example) grow margins and returns on capital at 11.1 percent and 12.3 percent, respectively. That impressive feat merely ensures that free cash flow grows at 10 percent and stays constant in real terms.

As long as high inflation persists, margins and return on capital need to keep increasing. To illustrate, consider the (unlikely) case in which inflation persists at 10 percent for 15 years. The new equilibrium level for ROIC would be 26.2 percent—more than 16 percentage points above its real-term, pre-inflation level of 10 percent. Unless we can project the company’s nominal cash flows to grow at the 15 percent inflation in perpetuity (and then discount these cash flows at the nominal cost of capital of 26.5 percent),4 the company’s value can’t exceed its current $1,000 level.

In practice, the precise level of improvement will depend upon the rate of inflation, the asset lifetime, and the real (not nominal) return on capital in a company. Nevertheless, from this simple illustration, we can better appreciate the challenges that companies face under persistent inflation. Growing operating profits, net income, and earnings per share at the pace of inflation are apt to destroy value in a high-inflation environment.

Yet history shows that when inflation picks up, companies typically find it hard to even stay in place. Sales—even on a nominal basis—may decline, pressures on margins increase, and returns on capital fall. We found that almost all industrial sectors in the United States suffered declines in returns, margins, and nominal revenues during rising inflation between 1970 and 1990 (Exhibit 2). Among the few exceptions were companies in the energy sector, which benefited from higher prices in oil and gas, and in consumer staples, where strong brands enabled companies to pass on a larger amount of their costs to consumers. But even these sectors suffered declines in sales. For the average US company, each percentage-point increase in inflation caused a 0.15 percentage-point decline in return on capital and a 0.60 percentage-point decline in growth.

Exhibit 2

Inflation setbacks for return, margin and growth

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Remarkably, inflation sensitivity has been quite similar from 1990 to 2020, when the United States experienced historically low inflation. While declines of 0.15 and 0.60 percentage points may not sound like much, they may actually pose a major hindrance: just to keep cash flows and value stable in real terms, returns on capital, margins, and, of course, nominal revenues should all be moving up.

Not surprisingly, high levels of inflation in the 1970s and 1980s generated significant downward pressure on stock market valuations, with P/E ratios in the US stock market falling to levels between 5–10, well below long-term average P/E ratio levels of 15–17. Apparently, investors expected (correctly) that high levels of inflation would last for several years. Likely, investors also expected that companies could not successfully pass on the costs of inflation and increase returns, margins would erode, and growth rates would stall. Those outcomes all came true, and resulted in the erosion of cash flows in real terms.

Bounding expectations

Temporary inflation is not likely to materially affect stock market valuations. But persistent inflation will. The main challenge is not some runaway increase in the cost of capital beyond the control of managers; it is the potential decrease of cash flows, in real terms, as inflation rises. With that insight in mind, managers should not rely exclusively on reported operating margins and returns on capital; likely, these metrics are distorted by inflation. Even if profits increase in nominal terms, they may be falling on a real basis. Financial ratios should be inflation adjusted, and managers should closely monitor inflation-robust metrics, such as cash margins of profitability and operating metrics for capital efficiency (for example, inflation-adjusted revenues over capacity measures).

#### Inflation will slow and be short term, but persistent wage growth will ensure it remains.

Winters 5-10 – Mike, economics reporter at CNBC. B.A from the University of Alberta.

Mike Winters, 5-10-23, “Inflation slows to 4.9% in April—here’s what to expect for the rest of 2023”, CNBC, https://www.cnbc.com/2023/05/10/inflation-slowed-in-april-what-to-expect-for-the-rest-of-2023.html

Despite nearly stalling in April, inflation is expected to decline to 4.41% in May, according to the Cleveland Fed’s Inflation Nowcast modeling. Similarly, inflation is expected to ease back down to 2.6% by 2024, according to 37 forecasters surveyed by the Federal Reserve Bank of Philadelphia.

These forecasts largely reflect a slowing economy and the effects of ongoing interest rate hikes that are making borrowing more expensive, which discourages spending.

It’s also worth noting that shelter costs as measured by the CPI tend to lag by a few months, so they don’t yet reflect the price declines of the past few months.

One mitigating factor to these forecasts is wage growth, which has been outpacing the rate of inflation. Increased wages encourage consumer spending, which can drive up prices.

“Until labor market conditions cool, a 2% inflation pace will remain difficult to reach,” says Kurt Rankin, senior economist at PNC Financial Services Group. PNC expects the CPI’s measure of inflation to “approach 3%” by 2024, he adds.

### Inflation---AT: Buffer Stock/Counter-Cyclical---2NC

#### There’s only a risk of a link---millions of people transitioning from unemployment to a government guaranteed job does not change the total supply of labor available to replace workers who demand high wages.

Palley 20 – Thomas, economist who has served as the chief economist for the United States-China Economic and Security Review Commission, PhD in economics from Yale University.

Thomas Palley, October 2020, "What's wrong with Modern Money Theory: macro and political economic restraints on deficit-financed fiscal policy", Elgar Online: The online content platform for Edward Elgar Publishing, https://www.elgaronline.com/view/journals/roke/8-4/roke.2020.04.02.xml

Though JGP spending automatically adjusts, a JGP is not an anti-inflation buffer stock mechanism, contrary to the claims of Mitchell and Mosler (2001). A JGP sets a wage floor which acts as a buffer stock mechanism guarding against deflation. It does so by drawing labor supply off the market as unemployment increases. However, it does not mitigate inflation by adding additional labor supply as unemployment decreases. The buffer against inflation is the supply of available labor and that is the same, with or without a JGP.29

In theory, the JGP proposal has significant macroeconomic benefits including generating a particular type of full employment, providing another automatic counter-cyclical stabilization mechanism, preserving the skills of unemployed workers by keeping them in jobs, and providing society with the benefits of the output produced by JGP workers.

However, it also has significant downsides which MMT proponents dismiss.30 One downside is the cost of a JGP, which could displace other needed programs (though MMT denies that by assumption, because it asserts government is financially unconstrained). A second downside is the potential to displace private sector production if workers prefer JGP jobs. A third downside is JGP jobs can be used to undercut public sector unions and enforce workfare in place of welfare. In effect, a JGP could be used by a neoliberal government as a double-edged sword to undercut public sector employment from above and undercut worker rights from below. A fourth downside is some JGP jobs might be characterized as ‘make work,’ and that could be used as political fodder by neoliberals in their war on government.

The JGP proposal also augments inflation worries that are already inherent in MMT's money-financed approach to fiscal policy. The main problem is a JGP sets a real wage floor for the entire economy, thereby implicitly introducing inflation indexation. As the economy approaches full employment, inflation will tend to rise in accordance with Phillips curve logic. That will trigger a higher nominal JGP wage, and raising the nominal wage floor will tend to spread inflation throughout the economy. If private sector firms fail to match the JGP nominal wage increase, workers will start to drift toward JGP jobs, causing a contraction of private sector output that could even potentially cause stagflation. The JGP is intended to be a non-inflationary automatic fiscal stabilizer. Yet closer inspection shows its implicit indexing may also render it an automatic inflation destabilizer.31

Furthermore, to the extent that a JGP delivers quasi-full employment, it will also tend to exacerbate income distribution conflict inflation which emerges at full employment (Kalecki 1943). That is because it would remove or diminish the threat of labor pricing itself out of work, thereby potentially increasing wage demands. The problem of full employment conflict inflation is generic, but a JGP would exacerbate it. Indeed, a JGP could trigger such inflation even earlier by emboldening wage demands earlier in the business cycle. There is no easy solution to that problem, which explains Lerner's (1977; 1978) interest in wage-increase permits (WIPs). However, MMT proponents are wrong to claim that a JGP is not afflicted by the conflict inflation problem, and they are doubly wrong to be dismissive of Lerner's later concerns that prompted his WIPs proposal.

#### Best studies prove it does not stabilize pricing. Either it retains discretion in fiscal policy, which would cause suboptimally low taxation, or it doesn’t, and it’s imperfectly calibrated to supply and demand shocks.

Jackson Mejia & Brian C. Albrecht 22, Meija is with the Massachusetts Institute of Technology, Department of Economics; International Center for Law and Economics and Kennesaw State University, Coles College of Business, “On Price Stability with a Job Guarantee,” Contemporary Economic Policy, vol. 40, no. 4, 2022, pp. 568–584

While one could advocate for the JG merely because of its social safety net property, MMT economists emphasize its ability to stabilize prices. Mosler (1997, p. 168) argues, "In addition to eliminating involuntary unemployment, the [JG] policy can be shown to provide price stability" (emphasis added). Mitchell (2017, p. 60) agrees, writing that a JG "would provide a macroeconomic stability framework designed to deliver full employment and price stability" (emphasis added).4 [FOOTNOTE 4 BEGINS] 4. It is not that the JG is a good policy that has an extra side benefit of stabilizing policy. The JG is explicitly a tool for stabilizing prices. In a blog post responding to critics, Wray (2019a) "MMT does have another tool to maintain price stability. It is the JG approach to full employment. It has always been a core element of MMT." [FOOTNOTE 4 ENDS] Indeed, MMT economists pitch the JG explicitly as an inflation management tool to replace the Phillips-curve-based non-accelerating inflation rate of unemployment (NAIRU) system employed by central banks today.

Theoretically, the JG would stabilize prices in two main ways. First, in the background, as an automatic stabilizer, workers migrate in and out of the JG sector endogenously, and the fixed nominal wage and guaranteed job promote price stability. By setting a wage floor and a guaranteed job, there is a floor on nominal income so that if a recession occurs, the government can bound deflation. Hence the government ensures that nominal income cannot fall too low. The outside option of a JG for workers and the large pool of JG workers from which to draw for employers helps discipline the wage bargaining process such that wages cannot rise as quickly as they otherwise might during booms and cannot fall as quickly as they might during busts. From our perspective, this is functionally the same as our current system, with unemployment insurance serving as the primary automatic stabilizer. Note that we discuss this and other automatic stabilizers in greater detail in Section 4. Moreover, although the JG program is the primary policy option for achieving stable prices, it is intended to complement other price stabilizing policies including regulation, addressing "bottlenecks," price controls, and using taxes to temper aggregate demand when necessary (Fullwiler, Grey, and Tankus 2019). For example, when economies are in boom phases, tax revenues rise as a consequence of greater profitability, which can automatically act as a mechanism for slowing private and moving workers to the JG sector, consequently anchoring prices (albeit with sufficient fiscal support).

For this paper, the relevant price stability mechanism of the JG is the one purported to replace the dual mandate of central banks. MMT economists frequently contrast the standard non-accelerating inflation rate of unemployment (NAIRU) concept with their own innovation, the non-accelerating inflation buffer employment ration (NAIBER) (Mosler 1997; Mitchell 2017; Mitchell, Wray, and Watts 2019). Under the NAIRU approach, which is dominant today, central banks manage inflation via interest rates, using some form of Phillips curve reasoning to increase unemployment through higher interest rates when inflation gets too high and vice versa. Under the NAIBER approach, defined as the ratio of JG workers to total employment consistent with stable prices, the government manipulates some policy lever to ensure that the buffer employment ratio (BER) remains consistent with stable prices, analogous to the NAIRU. However, this mechanism should not be understood as Keynesian fine-tuning; Wray (1998c, p. 543-544) notes that the critical difference is that, rather than fine-tune the economy as a whole, policymakers would only fine-tune the BER.

In contrast to the prevailing policy regime, the policy lever for manipulating inflation resulting from wage pressure under MMT is not interest rates. MMT economists argue interest rates should be set at zero (Mosler and Forstater 2005). Hence MMT advocates instead for fiscal policy as the proper lever for manipulating the JG by using it to move workers from the JG sector to the non-JG sector. When inflation rises, the role of the fiscal authority is to manipulate fiscal policy settings "to reduce the level of private sector demand. Labour is then transferred from the inflating private sector to the fixed wage JG sector and the BER [the ratio of JG employees to the total labor force] rises" (Mitchell, Wray, and Watts 2019, Ch. 19). Mitchell and Mosler (2002, p. 250) concur: "If inflation exceeds the government’s announced target, tighter fiscal policy would be triggered to increase the BER, which entails workers transferring from the inflating sector to the fixed price JG sector. Ultimately this attenuates the inflation spiral."5 [FOOTNOTE 5 BEGINS] 5. MMT economists exhibit substantial optimism in the ability of policymakers to use taxes to manage inflation. See Wray (1998a, p. 8-10), Bell (1999), Nersisyan and Wray (2010, p. 14), Tymoigne and Wray (2015, p. 26-8), Wray (2016, p. 10), and Nersisyan and Wray (2019, p. 8-9), all of whom advocate using taxes as one policy tool to fight inflation. While these authors do not explicitly argue such, we assume they mean a discretionary increase in taxes since they never mention an entirely mechanical, rule-based tax system. [FOOTNOTE 5 ENDS] Mitchell (2017, p. 70) agrees: "The value of the JG is that the government always knows that if total spending levels come up against the real capacity of the economy, then they are able to tighten fiscal policy without creating unemployment. In normal times, the JG would be a very small program but essential to those who would otherwise be excluded by private employers." In a foundational paper, Mitchell (1998, p. 552) describes the mechanism similarly:

[I]f the private labor market is tight, the non-buffer stock wage will rise relative to the BSE [JG] wage, and the buffer stock pool drains. The smaller this pool, the less influence the BSE wage has on wage patterning. Unless the government stifles demand, the economy will then enter an inflationary episode, depending on the behavior of labor and capital in the bar- gaining environment. . . In the face of wage-price pressures, the BSE/ELR approach maintains inflation control in much the same way as monetarism—by choking aggregate demand and inducing slack in the non-buffer stock sector. In private correspondence, Warren Mosler says that "if a shrinking ELR pool is not answered with demand reducing measures, other prices will rise relative to the ELR wage and old fashioned inflation can follow."

These "demand-reducing measures" turn out to be some form of policy. "As the BER rises, due to an increase in interest rates and/or a fiscal tightening, resources are transferred from the inflating non-buffer stock sector into the buffer stock sector at a price set by the government; this price provides the inflation discipline" (Mitchell 1998, p. 552). Numerous similar explanations appear throughout the literature.

From the perspective of MMT, the JG is superior to relying solely on either unemployment benefits or UBI for several reasons. First, the JG is seen as a better tool than either one because it has the unique property of allowing people to remain employed in some capacity and thus maintain work skills and habits while they continue to look for non-JG work. On the other hand, if unemployment benefits or UBI are used, then people may become idle and drop out of the workforce entirely. Second, while all three entail large government expenditures, only the JG has some prospect of producing public goods. Neither the UBI nor unemployment insurance has any hope of producing goods and services, except perhaps funding job search for the unemployed. However, this property does need to be traded off with the JG’s apparent production of public goods; presumably, JG workers will have relatively little time to search for private sector work. However, MMT economists do not preclude the continuation of unemployment insurance alongside the job guarantee program. Third, the UBI has no inflation-fighting properties, and MMT economists generally disparage the inflation-fighting properties of unemployment as socially unproductive since it relies on an “unemployment buffer stock” (e.g., Mitchell (2017)). As Mitchell (1998, p. 552) points out, "The disciplinary role of the NAIRU, which forces the inflation adjustment onto the unemployed, is replaced by the compositional shift in sectoral employment, with the major costs of unemployment being avoided. That is a major advantage of the BSE [JG] approach."

3 Time Consistency Model with a Job Guarantee

Since the MMT approach to inflation is novel and this is the first formal treatment of their proposal to manage inflation via the JG, it makes sense to consider MMT within a benchmark neoclassical model of inflation management. As with any policy without explicit rules, such as the JG, the time inconsistency problem lurks in the background. Hence, just as the neoclassical analysis of the central banking paradigm under rational expectations began in earnest with Kydland and Prescott (1977) and Barro and Gordon (1983) and continued with Rogoff (1985), we begin the formal treatment of the MMT inflation paradigm with a time consistency evaluation. To recapitulate, Kydland and Prescott (1977) consider a scenario in which inflation is high today and policymakers promise to lower inflation tomorrow. But given political preferences over inflation and deviations from the desired unemployment rate and a Phillips curve relationship, policymakers do not have an incentive to actually lower inflation sufficiently when tomorrow arrives. The public anticipates this and forms inflation expectations accordingly. Hence, given discretion over monetary policy, an inflationary bias persists.

We begin similarly by considering the response of the government to a positive inflation shock within an MMT/JG regime.6 There are three key distinctions between this policy regime and the one considered by Barro and Gordon (1983). First, rather than a "buffer stock of the unemployed," there is now a JG. The relevance here is that with a new program, the public should also have preferences over the size of this relative to the rest of the economy. Second, there is no longer a Phillips curve trade-off. Rather, there is a trade-off between the BER and inflation. Finally, the consolidated government no longer uses monetary policy to manipulate this relationship, but fiscal policy. Under these constraints, would policymakers restore stable prices given positive inflation? The intuitive answer is a resounding no; with discretion, the problem considered here is conceptually similar to the one considered by Kydland and Prescott (1977) and hence the fiscal authority will face an incentive to allow the BER to fall and inflation to rise.

To show this more formally, we have to build a minimal working model of the MMT economy, which is superficially very different from the one in Barro and Gordon (1983). Considering our discussion at the beginning of this section and in Section 2, a minimal list of ingredients to arrive at an analogous solution to Barro and Gordon (1983) is the following:

• A private sector and a JG sector

• Inflation dynamics

• A policy lever to change sectoral shares of the economy and hence inflation

• A relationship between the buffer employment ratio and inflation

We go through each of the above in turn to build the model and compute the equilibrium inflation rate analytically.

Private Sector and JG Sector

Suppose we have two sectors, one of which is a non-JG sector and the other is a JG sector:

• Non-JG (private sector) with flexible prices and wages

• JG sector with fixed prices and wages

Each sector’s share of total output is given by ϕi , i ∈ {JG, PS}, where JG is the subscript for the JG sector and PS is the subscript for the private sector. Mechanically, these add up to one, i.e.,

[EQUATION OMITTED]

Note that these sectoral shares are endogenous and are moved by fiscal policy, a relationship which will be examined in more detail later.

Inflation Dynamics

Inflation in this economy is the weighted average of inflation in the two sectors. With no inflation in the JG sector, we can simply write this as

[EQUATION OMITTED]

Inflation in the JG sector is fixed at πJG = 0. As Mitchell, Wray, and Watts (2019, Ch. 19) write, "The fixed wage offer that defines the JG policy also serves to stabilise the growth rate in money wages in the economy and thus provides a nominal anchor against inflation," which strongly suggests that nominal wages are fixed under the JG and hence price rises in that sector must be zero since there is a constant price level overall (or a predictable increasing price level, which can be normalized to zero).

In setting up the model, we make several simplifying assumptions about inflation. First, we assume that the only inflation in the model arises from price pressures that the JG is designed to alleviate. As noted earlier, MMT economists occasionally emphasize structural problems exacerbating inflation; we do not deal with those here. Second, we make an explicit assumption about the shape of the aggregate supply curve. The short run aggregate supply curve is horizontal until full employment followed by an upward sloping curve after Palley (2015). As Wray (1997, p. 547) explains, "If resources are fully employed, any extra demand would cause input prices to rise, which could be expected to be passed on in the form of higher prices." We set up the model this way for two reasons. First, it is a good approximation of a plausible MMT model. Second, the simplicity provides policymakers an easy signal for when to alter policy to combat inflation. Therefore, an increase in inflation comes from a demand shock. Finally, we assume that the extra demand comes from either an exogenous helicopter drop or a change in money demand. Relatedly, we assume that after the shock, the velocity of money is constant, or at least that changes in fiscal policy do not affect velocity.

Policy Lever

Next, we require a policy lever for the government to mitigate inflation. In standard models, a Taylor Rule mechanism is implemented by a passive central bank. That solution is not an option in this case because MMT explicitly rules out nonzero interest rates (Mosler and Forstater 2005) and we are interested in the case of an active government. This leaves fiscal policy as the main mechanism by which the government can affect inflation, so we model this as a lump-sum rather than distortionary tax for several reasons. First, we want to study one particular aspect of MMT in isolation and it would distract from the analysis if some results were seemingly driven by distortionary taxation. Second, we understand that in practice governments cannot have perfect foresight over the level of tax revenue collected but we model the fiscal authority as if they do. We view this as uncontroversial largely because tax authorities tend to act as if they have a certainty-equivalent level of tax revenue, otherwise budgeting would be impossible. Third, note that our model is an adaptation of the Barro-Gordon model, which collapses a dynamic choice problem into a one-shot decision when economic dynamics are ignored and the economy is in steady state from the start. Hence the same decision rule can be applied across all future periods, so there cannot be a concern about the level of tax revenue collected from lump-sum taxes changing over time. Finally, as noted above, there is significant textual evidence from MMT economists that this is exactly how policy is supposed to be done. When inflation rises, the role of the fiscal authority is to manipulate fiscal policy settings "to reduce the level of private sector demand. Labour is then transferred from the inflating private sector to the fixed wage JG sector and the BER [the ratio of JG employees to the total labor force] rises" (Mitchell, Wray, and Watts 2019, Ch. 19).

The imperative for fiscal action within the JG model also follows from the game theoretic hypothesis that a rational firm may in general want inflation to be lower, but will not take the necessary steps to reduce inflation themselves. If prices and wages are rising at approximately the same rate, then there is little private incentive for firms to discard their workers and hence make themselves less competitive. This introduces the need for fiscal policy to step in and take steps to slow the private sector and move workers to the JG.

Consequently, the government’s policy tool for changing the inflation rate is new taxes τ levied on the private sector. This trade-off between inflation and taxation leads to the result that taxes reduce aggregate demand and shift workers to the JG sector, which implies that sectoral shares change following a change in taxes. Let ϕ 0 PS denote the initial private sector share of the economy prior to the inflation shock and ϕ SP PS be the private sector share of the economy consistent with stable prices, both of which are exogenous. Following the MMT story, it must be that ϕ SP PS < ϕ 0 PS. Consistent with this setup, we define ∆ϕ SP PS ≡ ϕ SP PS − ϕ 0 PS to be the required change in sectoral shares to return to price stability. With fiscal policy tool τ and exogenous parameter τ SP that defines new taxes required for stable prices, the relationship between fiscal policy and sectoral share is given by

[EQUATION OMITTED]

Policy affects the real economy by shifting worker shares between the two sectors. In a stylized fashion, we assume that contractionary policy through an increase in taxes τ can bring the private sector share of the economy down from ϕ 0 PS toward ϕ SP PS. If the government chooses τ = τ SP, then the first term will drop out and we will be left with ∆ϕPS(τ SP) = ϕ SP PS − ϕ 0 PS = ∆ϕ SP PS. This is precisely the change in the private sector share of the economy required to yield a sectoral share of ϕ SP PS and hence stable prices. Following the mechanism described in the previous section, this reduction in the private sector share then reduces inflation:

[EQUATION OMITTED]

In eq. 3, π is the realized inflation rate, π0 is the (positive) inflation shock and ζ ≡ ϕ 0 PS−ϕ SP PS ϕ 0 PS is a parameter that corrects the relationship so that π(τ) = π0 if τ = 0. The mechanism is straightforward: fiscal policy reduces the private sector share, which then reduces inflation.7 To follow the MMT story, we assume that π0 is positive; the fiscal authority wants to reduce inflation to its optimal level.

To get a since of the relationship visually, we plot inflation as a function of τ in Figure 1 given different initial inflation shocks. Note that for π ′ 0 > π0, the required level of taxation to return to stable prices increases, τ SP′ > τ SP .

[FIGURE 1 OMITTED]

Relationship between BER and Inflation

We define the buffer employment ratio (BER) as the number of people employed in the JG sector (JGE) divided by all workers in the economy, E. Therefore, β ≡ BER = JGE/E. Following Mitchell (1998), we assume that there is a BER that leads to "non-accelerating" prices. It is called the non-accelerating buffer employment ratio (NAIBER). Symbolically, let η represent the NAIBER, which is the steady-state BER, and β the BER. We assume a relationship between between the BER, NAIBER, and expected inflation:8

[EQUATION OMITTED]

That is, the prevailing BER is a function of the NAIBER parameter η, current inflation, and the public’s inflation expectations π e , which are taken as given. When the BER is less than NAIBER, inflation will run correspondingly higher in the short run. The parameter ψ ∈ [0, 1] determines the extent to which the BER reverts back to the NAIBER in the long run. It is unclear what value ψ should take given existing MMT literature. An argument could be made that, even though the NAIBER is a long-run steady-state value, the fiscal authority ultimately controls the long-run value of this parameter (Mitchell, Wray, and Watts 2019, p. 305) and therefore inflation expectations are of little importance in the long-run. Ultimately, the extent to which the JG tends to distort the labor market will have an important impact on this parameter, but we do not model that here. We take the NAIBER as given and allow the reader to attach however much importance she wants to inflation expectations.

Note that, by combining equations (3) and (4), we obtain a mechanism for how the government can manipulate the prevailing BER through fiscal policy, something required under the MMT program (Ch. 19):9

[EQUATION OMITTED]

Thus, the fiscal authority can drive changes in the BER through changes in fiscal policy, i.e., taxation, by changing realized inflation relative to expected inflation and the long-run relationship between the BER and the NAIBER.

Preferences

The policymaker’s preferences reflect consumers in the economy. Preferences are represented by isomisery (social indifference) curves over deviations from the desired BER and inflation; the benevolent fiscal authority seeks to minimize over them. In particular, the fiscal authority, taking the NAIBER, expected inflation, inflation in the JG sector, and positive initial inflation as given, chooses the level of new taxes τ to minimize the present value of the stream of future misery indices. Without loss of generality, let socially desired inflation π ∗ = 0.10

[EQUATION OMITTED]

The desired BER is expressed as a fraction of the NAIBER, a parameter assumed to be known; the coefficient p ∈ [0, 1), which means that, if not for inflation, society would prefer the actual BER to be less than the NAIBER. We discuss this assumption in-depth in Section 3. We assume the policymaker knows the NAIBER parameter in order to make the implications of the model clear. In practice, this may not be the case, but the additional mathematical complexity engendered by making a different assumption would add nothing to the discussion. Moreover, policymakers today likewise do not have certain knowledge of the NAIRU parameter, but we model them as if they do anyway.

Equilibrium

Substituting (5) into (6) and taking a first-order condition yields the following equilibrium solution for τ:

[EQUATION OMITTED]

Plugging this into (3) gives the following result for inflation:

[EQUATION OMITTED]

Up to this point, the discussion has taken expectations as exogenous. Now, we impose the equilibrium condition that expectations are rational, such that π = π e . Taking account of the fact that inflation is determined by eq. (1), we can solve for aggregate inflation:

[EQUATION OMITTED]

Therefore, the equilibrium inflation rate will be greater than zero, showing that even a benevolent planner would not commit to stable prices. The result is straightforward and mirrors the classic time-inconsistency results: if the fiscal authority has preferences over the BER and inflation, but there are tradeoffs between them, then an inflation bias will exist. Inflation can be used in the short-run, and potentially the long-run (depending on the value of ψ), to obtain a prevailing BER lower than the NAIBER. To the extent that a lower BER assures greater productivity and hence greater output compared to a higher BER, this will be desired. Moreover, this problem is compounded by the fact that to reduce inflation, costly taxes are necessary. The public, taking account of the incentives facing the fiscal authority and the different trade-offs she faces, then forms rational expectations around an inflation rate greater than zero.

In contrast to discretionary policy, we can imagine a benevolent planner that commits to a tax rule, which specifies an automatic tax increase for every π0 shock. When ψ = 1, the planner’s optimal tax rule implements zero inflation.11 With commitment, the planner wants to stabilize prices. This is why we refer to stable prices as the "optimal" policy.

For those who dislike our specific model, it is important to note that our main result, that a policymaker without commitment will be more inflationary than the optimal policy, is quite general. The result relies on three hopefully uncontroversial assumptions. First, we make an assumption about preferences: the policymaker is willing to trade off inflation for a smaller BER. Second, we make an assumption about feasible outcomes: there exists some BER where a further decrease in the BER will increase inflation. Third, we assume that aggregate demand and hence inflation in the non-JG sector can be reduced through increases in taxation. These three assumptions, the latter two of which come directly from the MMT literature, combine to give the result. If the policymaker can decrease the BER through an increase in inflation, she will want to, contrary to the optimal policy according to MMT proponents.

The Ineffectiveness of a JG

The previous section showed that the JG does not solve the time-inconsistency problem in the MMT program; even with a JG, the planner does not have sufficient incentives to maintain stable prices. It is worth noting that some advocates of the JG have admitted that it is not a perfect mechanism for managing inflation, acknowledging that it is theoretically possible for inflation to persist even after a JG has been implemented, but not due to time inconsistency. For example, Mitchell, Wray, and Watts (2019, Ch. 19) write, "By design, a JG programme is a complement to. . . fiscal policies that aim to finetune total spending, and welfare or other social safety nets." Mitchell and Wray (2005b, p. 238) second this: "The ELR (job guarantee) pool still allows the economy to operate with higher aggregate demand and lower inflation pressures, although inflation can still result." Consequently, the job guarantee does not fully address the inflation bias problem; it may prevent excessive inflation or deflation, but some inflation may remain.

This section makes a stronger point: the JG does nothing to stabilize prices. ϕPS(τ) (nor any parameters relating to the determination of the JG share) does not show up in the final expression for equilibrium inflation. Therefore, regardless of whether a JG exists or what its size is

[EQUATION OMITTED]

We are not saying that the JG does not solve the time inconsistency problem. That is true but is not unique to the JG. As the model shows, if the JG does not exist, as previous models have implicitly assumed, we have the exact same inflation. The effect of the JG is zero on equilibrium inflation.

The reasoning is simple: as the JG share grows, its capacity as a nominal anchor increases as a consequence. However, with discretion, the planner has an incentive to stimulate the rest of the economy to a greater extent, resulting in an unchanged equilibrium inflation rate. Thus, the planner has even less of an incentive to increase taxes as much as she ought to, implying, a higher equilibrium inflation rate for the non-JG sector, though the same overall equilibrium inflation rate. Regardless of the JG share of the economy, (9) represents a social optimum given the constraints facing the planner.

Next, we analyze the extent to which the BER conforms to the NAIBER in the long-run given expectations. That is, we analyze the effect of an increase in ψ on the equilibrium inflation rate. For simplicity, assume a = b = 1.

[EQUATION OMITTED]

Thus, as ψ tends toward one, that is, as inflation expectations force the BER toward the NAIBER, the ability of the planner to permanently reduce the BER is mitigated, resulting in a lower equilibrium inflation rate. Given that we are unclear precisely what value this parameter could be expected to take given existing MMT literature, it is uncertain how close to one or zero this parameter is.

A Brief Justification for p < 1

There is reason to believe that p ∈ [0, 1). In general, a lower BER would surely be strictly preferable to a higher BER in the short run for several reasons. First, a lower BER is as sociated with higher productivity. Whatever the merits of the work performed within a JG program as perceived by the public, output per worker in a JG program is markedly lower than in normal public or private sector employment, a fact which will tend to push the social desirability of employing people in a job program lower and hence reduce productivity. This does not mean the JG is unproductive or that the jobs done by the JG are irrelevant; rather that the public would plausibly prefer workers to be in more visibly productive sectors which tangibly add to the national accounts. Indeed, one of the primary expositors of the JG acknowledges this problem: "Minimizing the BER improves productivity growth but leaves the economy open to inflation. By maximizing the BER, it controls inflation, but reduces productivity growth overall" (Mitchell 1998, p. 553). In this respect, a trade-off between inflation and productivity introduces a dilemma: to the extent that productivity is valued over inflation may determine the extent to which an inflation bias emerges.

Moreover, the greater the quantity of workers employed in a JG program, the more power workers will tend to have over employers in terms of exerting wage demands. Perhaps most crucially for why p < 1 is the fact that "the JG workers comprise a credible threat to the current private sector employees because they represent a fixed-price stock of skilled labour from which employers can recruit" (Mitchell and Wray 2005a, p. 6). To the extent that wage-earners have less bargaining power because of the JG, and in particular, to the extent that the JG represents a threat to both private- and public-sector unions, the JG represents a substantial negative externality for these groups while they are employed. All else equal, it is far better for a wage-earner or a union to have a lower buffer employment ratio because it increases their bargaining power. Indeed, while unions and labor lobbying groups could lobby for a lower BER, this would tend to raise the NAIBER in the long run, simply because these very same groups, whose existence is encouraged by MMT (p. 7), raise real wages above the market wage.

While we consider our arguments sufficient to justify p < 1, there has been some debate regarding whether that assumption is justified or even necessary to generate the result in the context of monetary policy. For example, Blinder (1998) challenges the empirical validity of p < 1 since, central bankers do not seek an unemployment rate below the natural rate. B. McCallum (1997) argues that since central bankers understand that the Phillips curve is vertical in the long-run, they would not target an unobtainable goal. On the other hand, Ruge-Murcia (2003) and Cukierman and Gerlach (2003) have demonstrated that inflation bias can result even when p = 1. If, for instance, there is uncertainty in the economy and the central bank is more concerned about excessive unemployment than excessive overemployment, an inflation bias can result. Here, the JG corollary would be if the fiscal authority were more concerned about a higher BER than a lower BER. The relevance of this literature is unclear in the context of MMT. Note, however, that if the public prefers a JG share of the economy different from the share consistent with stable prices, then the result goes through regardless of p. Hence it is not strictly necessary for our model to have p < 1, but it does illustrate the result most cleanly.

4 Automatic Stabilizers and Countercyclical Policy

While the MMT literature has not explicitly discussed the issue of time consistency, MMT economists have advocated for the use of automatic stabilizers as a means of overcoming general political economy concerns (Fullwiler, Grey, and Tankus 2019). Typically, their recommendations include procyclical tax policies and countercyclical spending, such as the JG (Wray 2019b, p. 17). The JG is intended to complement these programs rather than replace them entirely. Examples include traditional taxation policies, as well as "no longer indexing tax brackets or indexing them to an inflation target instead and introducing more tax brackets so that as incomes rise faster than the inflation target a higher percentage of income is progressively taxed" (Fullwiler, Grey, and Tankus 2019). For example, as incomes decline with decreased private sector demand, tax receipts fall. Note that tax bracket indexation may be counterproductive because changes in the price level may come from either a supply shock or a demand shock. Indeed, under this policy, the automatic stabilizer would be contractionary when an adverse supply shock occurs, which is precisely the opposite of the appropriate policy response.

Additionally, rather than allowing a fiscal authority to attempt to change taxes in realtime, Fullwiler, Grey, and Tankus (2019) suggest that "varying tax rates and other inflation offsets should be included in the budgeting process from the outset." This may have some merit, but including "inflation offsets" at the beginning of the period does not categorically evade the problem of discretion if the rule is not independent of the fiscal decisionmaking process, which by design occurs at the beginning of the period. Moreover, the authors take the position that "we are not against one or more agencies being given additional tools to collectively manage demand on a discretionary basis" (Fullwiler, Grey, and Tankus 2019) yet we fail to see how this eliminates fiscal fine-tuning.

While we have no objection to further progressivity on stabilization grounds and noting that tax policies are already procyclical, we do observe several problems with relying on procyclical tax policies as a primary stabilizer. First, there is a prime mover problem. Suppose there is a demand shock primarily due to loose fiscal policy. That is, automatic stabilizers are not designed sufficiently well such that inflation could be throttled at its source. Presumably, this is not impossible. Then we are back to our model: discretionary policy is necessary to reduce inflation any further than the automatic stabilizers have accomplished. Second and relatedly, it is improbable that, absent an enormous change in the structure of taxation, automatic tax policy would be sufficient to reduce the BER significantly absent discretionary intervention. Historically, discretionary policy has made up 50% of the policy response to demand shocks (Sheiner and Ng 2019). Indeed, Auerbach and Feenberg (2000) and Cohen and Follette (2000) find that the impact of automatic stabilizers, while apparent, is overall relatively modest, indicating that MMT may have a more substantial overhaul of the tax system in mind. Otherwise, the policies advocated would be insufficient.

Moreover, the automatic stabilizers would have to be designed to automatically move the BER to the NAIBER, something which would require current knowledge of the NAIBER but perfect foresight of the structure of the economy. The reasoning is simple: the structure of the economy necessarily changes over time, which implies that automatic stabilizers cannot be designed ex ante such that inflation is perfectly addressed in each case. Hence some form of discretion is required. This does not necessarily mean tax policy, but it does mean that at some point the fiscal authority has to make a choice.12 At some point, there must be discretion.

Third, and perhaps most importantly, it is impossible for these automatic stabilizers to discriminate between supply shocks and demand shocks (Blanchard 2000). In an ideal world, stabilization policies would minimize deviations from potential output but not react to changes in potential output. This is not the case with automatic stabilizers (like tax policy) intended to react to changes in output, but which cannot adequately discriminate between changes in potential output and deviations from potential output. Moreover, as noted by Blanchard and Summers (2020), output shocks tend to be more persistent than unemployment shocks and hence may be permanent changes to potential output rather than deviations from potential output. Consequently, automatic stabilizers triggered by output changes—like tax policy—are not recommended.

Fourth, Blanchard and Summers (2020) advocate for semi-automatic stabilizers triggered by unemployment rather than output. Semi-automatic stabilizers are fiscal rules—generally, tax or spending measures—"triggered by the crossing of some statistical threshold, be it a low output growth rate or a high unemployment rate" (Blanchard and Summers 2020, p. 125). An existing example is the extension of unemployment benefits during a recession. In a JG world, this is not possible. Changes in the BER follow changes in the stance of fiscal policy rather than vice versa, so that the structure of JG employment could not serve as a useful trigger for an automatic stabilizer. Thus, absent a major innovation in stabilization policy, MMT policymakers would conduct automatic stabilizers (or semi-automatic stabilizers) based on output triggers, a suboptimal policy.

Even taking into account automatic stabilizers like a progressive income tax structure, the fiscal authority would still, on net, prefer fewer taxes than are required to move the BER to the NAIBER. Moreover, the only way to avoid this outcome, which would be to eliminate discretion, would require perfectly designing a system of automatic stabilizers. Then, the future path of booms and busts is exactly offset, and the BER equals the NAIBER consistently, something which we have already argued is impossible. Finally, if the fiscal authority does tie its own hands and leaves demand management completely to an imperfect system of automatic stabilizers, there would inevitably be accelerating or decelerating inflation. The reason is simple: if fiscal policy is necessary to move the BER to the NAIBER, but is incapable of doing so, then the BER will be at a level such that inflation is accelerating or decelerating.

### Spending Link---JG Costly---2NC

#### Even proponents think it would be as expensive as the military. That’s a wild underestimate.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

4.2 Cost

How much would a federal job guarantee cost taxpayers? The short answer, at the size the two reports project, is it would cost about the same as the Pentagon.

The CBPP report estimates an annual cost of $583 billion, while the lower and upper bounds in the Levy report are around $400 billion and $550 billion per year, respectively, in a ten-year simulation. The Levy report’s lower cost estimate, despite higher participation than that projected in the CBPP report, arises because its authors significantly underestimate their plan’s cost of capital and worker benefits.

Table 1 breaks down the components of both reports’ cost projections, and partially corrects areas in which we believe the Levy report has demonstrably underestimated its plan’s costs.

Because of different ways of incorporating the option of part-time work, the average annual-wage figures for the two reports are not directly comparable. The CBPP report assumes an average annual salary of $32,500, approximately equivalent to fifteen dollars per hour. To account for the fact that some work would be part-time, it converts its projected 10.7 million participants into 9.7 million “full time equivalent” workers. The Levy report assumes a fixed wage of fifteen dollars per hour and an “average work week” of thirty-two hours, thereby incorporating a slightly larger assumed share of part-time workers in the program (assuming full time would mean a fortyhour week).

#### The program would likely provide benefits: that magnifies the cost.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

Worker Benefits

The CBPP report then adds costs for worker benefits. While the authors do not describe the benefits in concrete terms, they appear to be comparable to standard benefits received by full-time American workers. They assume a cost of $10,000 per enrollee for direct benefits plus $2,500 for FICA taxes (which go toward future benefits).

According to these projections, 27.8 percent of enrollee compensation will be in the form of benefits. This number is somewhat lower than the 31.8 percent national average reported by the Bureau of Labor Statistics (BLS) in March 201811 and therefore might be a slight underestimate.

[[Chart Omitted]]

The Levy report’s estimate for cost of worker benefits, on the other hand, is not defensible. The authors assume benefits will cost 20 percent of what each worker is paid in wages, or 16.7 percent of total compensation. The examples they provide for benefits are health care and child care (the latter of which is not part of the BLS calculation) though it is unlikely they would want the government to withhold any of the standard benefits from enrollees.

Replacing the Levy report’s figure with the BLS national average raises the cost of every job in the plan by 22 percent. Unless the authors provide a reasonable explanation for their original estimates, the estimates must be corrected before they can inform any policy discussion.

#### The plan also requires mass capital purchases which drives up costs.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

Capital Costs

Any work done by job-guarantee enrollees will require materials, machines, and know-how. The CBPP report assumes capital expenses of $11,000 per worker. The Levy report assumes capital costs equal to 25 percent of wage costs, or just over $6,240 per worker (given their fixed wage of fifteen dollars per hour and assumed average work week of thirty-two hours).

Capital intensity varies greatly by type of work. Because both reports are short on details regarding the work assigned to program enrollees, checking the plausibility of these estimates is challenging. Both reports further confound such efforts by offering no source for their assumed capital costs.

The nonmarket structure of the proposed programs muddies the waters even further. Because the cost of labor is fully subsidized by the federal government rather than valued at a market rate, standard spending ratios such as capital to labor and capital to output cannot provide meaningful benchmarks to evaluate the authors’ estimates.12

One point of comparison is capital expenditure per worker. The Census Annual Capital Expenditure Survey reports total spending on equipment and structures across all industries in 2016 of $1.58 trillion. Dividing by 150 million, the approximate size [[Chart Omitted]] of the U.S. workforce in 2016, yields an estimated average capital expenditure per worker of just below $11,000. This amount mirrors the CBPP report’s estimate, but the authors often emphasize infrastructure projects, which would be on the high end of capital intensiveness.

Once again, the Levy report’s assumed expenditure appears far too low. While relying on laborintensive projects makes sense given the plan’s full subsidization of labor costs, the report’s lack of detail makes it impossible to reliably estimate how much capital would be used. Had the Levy report instead used the census estimate of average capital spending per worker, the plan’s cost would increase by another 11 percent.

Both reports neglect the cost of human capital. Even if most of the labor used in the proposed programs is unskilled, someone presumably needs to know how to do the work. This need is likely especially pronounced for work such as infrastructure and environmental cleanup. Other proposed work such as teachers’ aides and elder care would also require significant training. Beyond hoping that experts in these fields will become unemployed and willing to accept relatively low-wage work, some industry professionals would have to be hired at competitive salaries, further increasing the cost of both plans.

#### Administrative costs would also be huge.

Gulker 18 – Max, PhD in economics from Stanford University. Senior Research Fellow at the American Institute for Economic Research.

Max Gulker, 2018, “The Job Guarantee: A Critical Analysis” American Institute for Economic Research. https://www.aier.org/wp-content/uploads/2018/10/JobGuarantee\_0.pdf

Budgetary Impact

While neither report advocates ending other government entitlement programs in the wake of a federal job guarantee, the authors are correct that some of the cost would be offset by savings in unemployment insurance and programs aimed at poverty. Only the Levy report attempts to estimate the size of these offsets. However, as we describe in appendix 2, the authors fail to include obvious negative budgetary impacts along with cost savings. Since we do not explicitly estimate these negative impacts, presenting program costs without offsets is more informative than only including the offsets.

Comparing Costs

Chart 3 compares annual cost estimates for both reports’ federal job-guarantee programs with two current big-ticket items in the federal budget, defense and Medicare/Medicaid. We quote the CBPP report’s own costs estimate without alteration and raise the Levy report’s lower- and upper-bound estimates by 33 percent to correct for demonstrable errors in the cost of capital and benefits. We do not further revise the cost projections upward for greater participation (due to either the de facto minimum wage hike or potentially harder economic times) or costs of capital, worker benefits, or administration.

Any way one slices it, a federal job guarantee would add greatly to America’s already-strained budget. The CBPP report estimate and corrected Levy report lower estimate are slightly lower than but comparable in magnitude with spending on defense, while the corrected Levy report upper estimate begins to leave the realm of current discretionary spending and is closer in size to obligations under Medicare/Medicaid.

### Spending Link---JC Costly---AT: Tax Revenue---2NC

#### Tax revenue increases are minor.

Shambaugh et al 18 – Jay Shambaugh, director of The Hamilton Project and a senior fellow in Economic Studies at the Brookings Institution, a Professor of Economics and International Affairs at the Elliott School of International Affairs at The George Washington University, Member of the White House Council of Economic Advisers (August 2015–January 2017) Ryan Nunn, Policy Director, The Hamilton Project; Fellow, Economic Studies, the Brookings Institution, doctorate in Public Policy and Economics from the University of Michigan, Jimmy O’Donnell.

Ryan Nunn, Jimmy O’Donnell, and Jay Shambaugh, 2018, Labor Market Considerations for a National Job Guarantee, The Brookings Institute, https://www.hamiltonproject.org/wp-content/uploads/2023/01/JobGuarantee\_FP\_web\_20190206.pdf

In addition, job guarantee participants would now be earning money, leading to an increase in tax revenue. However, this tax revenue would be relatively limited. A single individual earning $30,000 would face a combined payroll and federal income tax liability of roughly $6,000, offsetting a significant portion of their wage cost; however, if that person was the head of a four-person household, the combination of exemptions, deductions, EITC, and child credits would generate no total federal tax liability. Some individuals would then earn enough to become ineligible for EITC, but many who were previously not working would become eligible.17

### Spending Link---AT: MMT---T/L---2NC

#### MMT controls inflation by implementing a suite of radical policy tools. Congress will never do that.

Moller 19 – Zach, Economist at the Senate Budget Committee, Senior Policy Analyst at the Committee for a Responsible Federal Budget, master’s in economics from the University of Virginia.

Zach Moller, 7-18-2019, "What is MMT and Why isn’t it Practical", Third Way, https://www.thirdway.org/memo/what-is-mmt-and-why-isnt-it-practical

Therefore, proponents of MMT believe that there are no traditional budget constraints on spending because a monetarily sovereign government can always print more money to finance its debt. They argue that since the government creates money, there is no reason that a government cannot simply print more money if it chooses. If inflation occurs because of that, the government should use higher taxes or lower spending—both which take money out of the economy and therefore curb inflation.1

In essence, instead of the Federal Reserve regulating the money supply to manage the competing demands of economic growth, full employment, and modest inflation, that role would be left up to Congress and the White House through taxation and federal spending policies that have the effect of reducing or increasing the money supply.

MMT is often pejoratively attacked as only saying that deficits do not matter. The most visible expert on MMT, Stephanie Kelton, clarifies: “Of course, there are real limits to what can be done. No country can commit to large-scale infrastructure investment unless it has the available labor, machinery, concrete and, steel. Trying to spend too much will cause an inflation problem. The trick is to adjust the budget to make efficient use of the people, factories and raw materials we have.”2

What are Some Potential Pitfalls for MMT?

If MMT sounds too good to be true, that’s because it is. All progressives want to devote additional funding to a series of sectors, from health care and education, to economic security and the environment, so the theory carries an obvious appeal. But MMT is riddled with pitfalls.

1. It assumes politicians will easily raise taxes and cut spending.

Under an MMT regime, policymakers would need to respond to inflation by doing two of the most unpopular things ever: raising taxes and cutting spending.

With MMT, if inflation starts to get out of control, money needs to be pulled out of the economy either by taxing people more or spending less. Raising taxes is, of course, historically difficult in America. For example, the last time Congress passed a meaningful increase in the payroll tax was in 1993 when the earnings limit was repealed for the Medicare portion of FICA.3 The last Republican president to sign a tax increase into law was President George H.W. Bush in 1991.4 With one party adamantly opposed to increasing taxes, it seems like a fantasy to believe that politicians would approve a tax increase while people’s earning power is being eroded by inflation. On the spending side, do we see Democrats actually cutting spending and taking an ax to things like national parks, food inspection, and health care services? They shouldn’t have to—and they won’t.

#### Even if MMT can constrain inflation, runaway spending creates other economic problems like higher interest rates, erratic exchange rates and low consumer confidence.

Palley 20 – Thomas, economist who has served as the chief economist for the United States-China Economic and Security Review Commission, PhD in economics from Yale University.

Thomas Palley, October 2020, "What's wrong with Modern Money Theory: macro and political economic restraints on deficit-financed fiscal policy", Elgar Online: The online content platform for Edward Elgar Publishing, https://www.elgaronline.com/view/journals/roke/8-4/roke.2020.04.02.xml

3.2 Macroeconomic constraints and adverse policy feedbacks

The second panel in Figure 2 concerns macroeconomic constraints and adverse policy feedbacks which MMT ignores and which undermine its claim that government is financially unconstrained. Though government has the formal technical ability to finance all spending by creating money, that technical ability is a will-o'-the-wisp because government is constrained by the reality of the potentially high economic costs of doing so. Using the ‘printing press’ to finance spending can create subsequent problems that leave government worse off measured in terms of its objective function.

In the real world, economic policy and policy outcomes are subject to multiple economic concerns and constraints. Those include concerns about government bond rates, private credit market long-term interest rates, financial market stability, the balance of payments and the exchange rate, the inflation constraint imposed via the Phillips curve, and policy implementation and policy credibility constraints. Those various concerns and constraints impact the economic costs and effectiveness of deficit-financed fiscal policy. However, they are all absent in MMT's oversimplified theoretical framework. In particular, MMT's framework is static and has little to say about how policy affects expectations of the future, and how expectations of the future have important immediate consequences.

3.2.1 Financial markets, the complex of interest rates, and asset prices

Government is likely to face significant financial market blowback if financial markets believe it is engaging in excessive money issue. In particular, long-term interest rates will tend to rise if financial market participants anticipate risks of future financial turmoil or higher future inflation. Current financial market conditions are affected by expectations about the future, which means the future is always already here and in the present. Consequently, inflationary bias in MMT's reliance on money-financed deficits will creep into present financial market conditions long before full employment.

It is sometimes claimed that government can set the long-term bond interest rate, just as it sets the short-term money market interest rate. The argument is government can buy or sell long-term bonds to set the long-term interest rate in the same way as it does for the short-term rate. However, if private agents deem the bond rate too low given inflation expectations created by money-financed deficits, the government bond market will shrivel, in the sense of fewer private agents being willing to buy government bonds. More importantly, bond market repression does not prevent interest rates rising in private credit markets, and they may even overshoot owing to unfavorable expectations caused by money-financed fiscal policy. Consequently, the combination of money-financed deficits and bond market repression can disrupt private credit flows, and thereby disrupt economic activity. Furthermore, owing to expectations, those disruption effects can emerge in advance of full employment. However, once again, such effects are absent in MMT because it ignores expectations and treats private credit markets as irrelevant.

Increases in the money supply can also potentially cause asset price bubbles. That is because some of the money injected into the circular flow of expenditure and income leaks into the financial circuit via the process of saving (Palley 1998), where it is directed to bidding up asset prices. Bubbles are unstable and subject to abrupt crashes owing to changes in sentiment and expectations. When they crash they can cause major economic disruption, as illustrated by the global financial crisis of 2008. Bubbles can also develop independently of full employment. Those features give policymakers good reason to prevent them, which constrains policy. For instance, bond-financing of deficits may be preferable to money-financing to the extent that bond-financing is less likely to promote financial market bubbles. However, bond-financing raises its own concerns with adverse interest rate effects and debt sustainability. Such considerations are absent in MMT's analysis because it is silent on asset price formation, the effect of asset prices, and the impact of budget deficits on asset prices.

Interestingly, the effect of budget deficits on credit and asset markets will likely depend on current conditions and expectations of future outcomes, with expectations being influenced by the nature of the policy regime. That type of effect illustrates the importance of the Lucas (1976) critique for understanding financial market responses to deficit-financed fiscal policy. Such concerns with the bond market's reaction and psychology were also central in Keynes's critique of Lerner's functional finance view and its assertion that money-financed spending could effortlessly solve the Keynesian macroeconomic problem (Aspromourgos 2014). However, such effects are again absent in MMT, which explains why MMT fails to recognize them.

3.2.2 Exchange rate and trade balance concerns

Budget deficits can also have significant adverse exchange rate and balance of payments effects, especially money-financed deficits. Expansionary budget deficits bleed into the trade deficit via their impact on income and the demand for imports. The deterioration of the trade deficit then tends to depreciate the exchange rate. The exchange rate will also tend to depreciate owing to adjustment of international portfolio positions. Exchange rate depreciation can then cause inflation, which further aggravates the depreciation problem. Additionally, under certain circumstances, exchange rate depreciation can trigger macroeconomic contraction (Krugman and Taylor 1978).

Keynesian macroeconomics emphasizes international constraints, and they are often summarized in models via the idea of a balance of payments constraint. However, owing to its US-centric focus, MMT largely ignores such problems which are a first-order constraint on economic policy in many countries. Moreover, in the past the US has also been subject to such constraints, and it could confront them again in the future.

#### MMT also ignores a laundry list of factors including the negative effects of central bank/government collaboration, the Fisher effect, risk premiums AND over-estimates government competency in manipulating aggregate demand. Their authors systematically ignore the risk of inflation from runaway spending.

Edwards 19 – Sebastian, Chilean economist, Professor of International Business Economics at UCLA, former Chief Economist for the Latin America and Caribbean Region of the World Bank, research associate of the National Bureau of Economic Research, a member of the advisory board of Transnational Research Corporation and co-chairman of the Inter American Seminar on Economics, former President of the Latin American and Caribbean Economic Association.

Sebastian Edwards, 2019, "Modern Monetary Theory: Cautionary Tales from Latin America", Cato Institute, Cato Journal Vol. 39 No. 3, https://www.cato.org/cato-journal/fall-2019/modern-monetary-theory-cautionary-tales-latin-america

A short and partial list of limitations of MMT would include the following:

• There is no serious attempt to integrate different markets and sectors into a general equilibrium macroeconomic perspective, in the tradition of Patinkin (1965). More specifically, MMT fails to recognize that what really matters are excess demands or excess supplies in specific markets, which spill over (with the opposite sign) to the rest of the economy. Indeed, it is important to realize that situations of sizable excess supplies of money, which are translated into excess demands for bonds and goods, may arise because of the collapse of the demand for domestic money.

• MMT ignores (or minimizes) the role of expectations on interest rates. As is well established by empirical research, expected inflation is translated into higher interest rates through the so‐​called Fisher effect. In addition, MMT ignores the role of expectations of currency depreciation and of credit events. MMT supporters repeatedly make the point that countries with a currency of their own don’t ever have to default on their debts, as long as they are denominated in local currency. What this perspective ignores is that hyperinflation — the outcome of many MMT‐​type policies — is a form of default. In Argentina, for example, there is even a term used for this mechanism for not paying the sovereign debt as initially contracted — “liquefying the debt” (Edwards 2010).

• MMT, essentially, offers a closed economy view of the world. This is the case even though a number of MMT authors have written about exchange rate regimes. As noted, a straightforward way of interpreting MMT is as a policy mix that simultaneously shifts to the right the IS and LM curves. Of course, open economy models of that vintage include, since at least the work of Robert Mundell, a third schedule, often called the FF curve, which captures the combination of interest rates and income compatible with external balance. Every time a domestic policy moves the economy away from the FF curve there will be a currency depreciation or appreciation to reestablish external equilibrium. A well‐​established empirical fact in international economics is that currency depreciation tends to be passed onto prices. The extent of this transmission is an empirical question and varies from country to country. MMTers, however, minimize (or ignore) this mechanism.

• MMT does not delve into the intricacies of modern financial markets. Among other things there is no inkling of portfolio decisions by investors and households, or how those tend to affect the way in which policies interact with the key economic variables. More specifically, there is no role for risk premium in these models. In MMT conceptual models interest rates are determined in the simplest possible way by the central bank. There is no theory of the term structure of interest rates or of the transmission mechanism of monetary policy. There is no consideration for the fact that the demand for sovereign debt may shift as a result of changes in expectations.

• MMT ignores the strategic interaction of different economic agents and institutions in a modern economy. No game theory considerations are included in these models. There is no discussion about credibility or lack thereof. In MMT models there is no reason why a central bank may want to be independent of political forces. However, the evidence stemming from Latin America indicates that as soon as central bank independence is weakened, and the central bank begins to work for the government, inflation expectations take off, as does inflation proper.

• MMT supporters believe that supply constraints are soft. Increases in aggregate demand will usually be accommodated by increases in output. In addition, MMT believes that large current account deficits are beneficial, because the rest of the world is willing to provide real resources in exchange for IOUs. At the core of these beliefs is the notion that economic authorities can fine‐​tune macroeconomic policy — that is, it is possible for the central bank to finance large increases in government expenditure and still keep things under control. If there is a threshold beyond which it is advisable to increase aggregate demand, policymakers will recognize it. They will stop just short of it, and, if necessary, will implement a restrictive fiscal policy. The experiences of the Latin American countries discussed in this article (and of other cases) indicate that that type of fine‐​tuning is extremely difficult, and that, once politicians capture the central bank, they will continue to use its money creation authority well past that threshold.

### Spending Link---AT: MMT---AT: Taxes Solve---2NC

#### The way that MMT controls inflation is through dramatic tax increases.

Thorndike 20 – Joseph Adjunct Professor at Northwestern University School of Law

Joseph Thorndike, 12-17-2020, "Tax Theory: Are We All Modern Monetarists Now?", Forbes, https://www.forbes.com/sites/taxnotes/2020/12/17/tax-theory-are-we-all-modern-monetarists-now/?sh=5b32484e5c13

MMT has some interesting things to say about taxes. Most basically, it challenges the idea that taxes are linked to spending in any meaningful way. Under traditional ways of thinking, the government collects money through taxes and then decides how to spend it. Under an MMT way of thinking, the government decides how to spend money and then just goes ahead and spends it. Whether the government decides to levy taxes depends on other factors, not on the need to raise money for its spending priorities.

Revenue, in other words, does not constrain spending in the world of MMT. And to be fair, this seems like a pretty good description of the way the United States has been making spending decisions for a while. Sure, thanks to budget rules, there are some limits on what gets spent, and those limits are tied (somewhat notionally) to what tax revenues get collected. But it’s fair to say that in many respects, spending decisions do come first in Washington, with tax decisions playing a secondary role. Hence the deficits.

Under MMT, taxes still have a role to play. Two roles, in fact. First, a government levies taxes to make its sovereign currency valuable. By requiring people to pay their taxes in dollars, the U.S. government guarantees that people will do many other things with those dollars — earn money, spend money, lend money, etc. Taxes make dollars the currency of choice, rather than some alternative like bitcoins or euros.

The second reason a government levies taxes in a world defined by MMT is to control inflation. Because here’s the thing to remember: MMT theorists do believe that inflation is a threat. They understand that unchecked government spending, in particular, might push prices higher. And they endorse the use of taxes to help control those inflationary pressures.

#### Those taxes fail to control inflation due to time lag.

Edwards 19 – Sebastian, Chilean economist, Professor of International Business Economics at UCLA, former Chief Economist for the Latin America and Caribbean Region of the World Bank, research associate of the National Bureau of Economic Research, a member of the advisory board of Transnational Research Corporation and co-chairman of the Inter American Seminar on Economics, former President of the Latin American and Caribbean Economic Association.

Sebastian Edwards, 2019, "Modern Monetary Theory: Cautionary Tales from Latin America", Cato Institute, Cato Journal Vol. 39 No. 3, https://www.cato.org/cato-journal/fall-2019/modern-monetary-theory-cautionary-tales-latin-america

Phase 3. There is a deepening of imbalances and inflation accelerates, generally moving to the three‐ or four‐​digit terrain. “Fiscal dominance” becomes more acute, as the central bank continues to finance the government. The frequency of price adjustments, through indexation, increases — first to quarterly and then to monthly intervals. Pervasive indexation tends to worsen the fiscal accounts through the so‐​called Olivera‐​Tanzi effect. Government expenditures increase according to the indexation formula, while tax revenues are collected based on lagged income figures. Consumers ditch domestic money, and foreign exchange becomes the medium of exchange. However, since the government requires that taxes be paid in domestic currency, the local monies (pesos, soles, escudos, bolívares, and córdobas) do not disappear completely. Demand for domestic money, however, falls very rapidly, with velocity of circulation increasing significantly. The disparity between inflation (very high) and exchange rates (depreciating more slowly) intensifies the extent of real exchange rate overvaluation.17

#### But they do obliterate the economy.

Pethokoukis 12 – James, economic policy analyst, Dewitt Wallace Fellow at the American Enterprise Institute

James Pethokoukis, 4-24-2012, "7 Reasons Why Higher Tax Rates Hurt Economic Growth (A Response to Diamond and Saez)", American Enterprise Institute - AEI, https://www.aei.org/economics/public-economics/7-reasons-why-higher-tax-rates-hurt-economic-growth-a-response-to-diamond-and-saez/

Diamond and Saez argue that high tax rates tend to “go with higher economic growth.” As evidence, they note that per capita GDP growth averaged 1.68% between 1980 and 2010 when top tax rates were “relatively low,” while growth averaged 2.23% between 1950 and 1980 when rates were at or above 70%. In addition, they find “no clear correlation between economic growth since the 1970s and top tax-rate cuts across Organization for Economic Cooperation and Development countries.”

There are a number of serious problems with this analysis:

1. The high growth rates of the 1950s and 1960s occurred at a time when the U.S. had a tremendous competitive advantage over other advanced economies that were still recovering from World War II.

A National Bureau of Economic Research study describes the situation this way: “At the end of World War II, the United States was the dominant industrial producer in the world. With industrial capacity destroyed in Europe—except for Scandinavia—and in Japan and crippled in the United Kingdom, the United States produced approximately 60 percent of the world output of manufactures in 1950, and its GNP was 61 percent of the total of the present (1979) OECD countries. This was obviously a transitory situation.” Indeed, it was “transitory.” Europe recovered and was eventually joined by Japan and China as advanced economies and fierce competitors.

2. Effective tax rates were far lower than the statutory ones Diamond and Saez point to. When the official top rate was 91% in the 1950s, for instance, the top effective tax rate was probably closer to 50%. What Diamond and Saez want to do, of course, is raise tax rates to historically high levels while also eliminating ways of avoiding those rates. As such, effective tax rates would be far higher than any time in our nation’s history. The U.S. economy would be in uncharted territory.

What’s more, high tax rates during the 1950s and 1960s didn’t produce more revenue than lower ones in the Reagan Era. Income tax revenue as a share of GDP was 7.7% from 1951-1963, a bit lower than was it was from 1982-1992.

3. Economic growth slowed almost everywhere after 1973. Thus, as economist Scott Sumner has pointed out, we need to look at relative economic performance in order to identify the effect of pro-market policy reforms such as deregulation, privatization, and, yes, the lowering of marginal tax rates. Sumner found that nations which pursued such pro-market policies slowed less and outperformed those nations that didn’t. As he said in an interview, “Countries that didn’t reform very much, like Italy and Greece, their growth rates slowed from 7% to 2% in recent decades. The United States and Great Britain have actually slowed much less than the more statist economies. The growth slowed a little bit in the United States, but not dramatically.”

4. Look at what just happened in Great Britain. Their Independent Fiscal Oversight Commission—which reviews all of the budgetary assumptions—just ruled that cutting the top rate of tax from 50 to 45 was revenue neutral, implying the revenue maximizing rate is in that range. The Brits don’t have state income taxes, which implies by extension that our revenue maximizing federal rate is lower than theirs.

5. And recall the 1993 Clinton tax hikes. Those took the top income tax rate to 39.6%, where President Obama wants it to return. But in 1995, President Clinton admitted he had raised taxes too much. Indeed, those tax hikes only raised a third of the amount the Treasury Department had predicted.

6. Raising investment taxes is the wrong way to go. To “reduce tax avoidance opportunities,” Diamond and Saez argue that tax rates on capital gains and dividends should increase along with the rate on labor income. This pushes the tax code in an anti-growth direction in the name of fairness.

Really, though, we shouldn’t want to tax capital at all. As an AEI study on consumption taxes explains: “The income tax’s penalty on saving is an undesirable distortion of consumer choice. It also causes less capital to be accumulated in the United States. The reduction in capital accumulation reduces labor productivity and lowers real wages throughout the economy, depressing the standard of living of future generations. Some studies have found that a switch to consumption taxation would increase the size of the U.S. economy by as much as 9 percent in the long run, although other studies estimate smaller gains.”

And a study from Colgate University found the following: “Lower financial income taxes stimulate innovation and enhance labor productivity in the long run.” As JFK put it: “The tax on capital gains directly affects investment decisions, the mobility and flow of risk capital from static to more dynamic situations, the ease or difficulty experienced by new ventures in obtaining capital, and thereby the strength and potential growth of the economy.”

#### Even a 1% increase in the tax rate would decrease GDP by nearly 7%.

Alex Durante, 5-21-2021, "Reviewing the Impact of Taxes on Economic Growth", Tax Foundation, https://taxfoundation.org/reviewing-recent-evidence-effect-taxes-economic-growth/

Zidar (2019) examines the impact of federal tax burdens on economic growth and labor supply across different income groups and states from 1950-2011. He finds positive impacts of tax cuts on economic growth following two years after the change in policy but finds that tax cuts for low- and moderate-income taxpayers affect growth more than tax cuts for high-income taxpayers. The paper finds that a 1 percent of state GDP tax decrease for the bottom 90 percent of earners increases state GDP by 6.6 percent. Looking at labor supply effects in particular, he finds that a 1 percent of state GDP tax decrease increases labor force participation for the bottom 90 percent of earners by 3.5 percentage points and hours worked by 2 percent. He does not find any significant impact on labor force participation rates, hours worked, or GDP growth for the top 10 percent of earners from a similarly sized tax change, somewhat in contrast to the results found in Mertens and Olea (2018) for top earners.

This result may lead some to assume that Zidar is identifying “Keynesian” effects of tax changes, or aggregate demand effects. However, the paper finds strong effects of tax cuts on real wages as well. As Zidar notes, “the increase in real wages suggests that supply-side responses are important and may exceed demand-side responses to tax changes for the bottom 90%.” Additionally, some may go further and argue that this paper shows that tax cuts for top earners have no impact on growth. However, this paper only looks at short-run impacts of tax changes on GDP and does not consider the broader implication of tax policy on long-run growth, human capital, or innovation. Nonetheless, the paper provides compelling evidence of tax cuts impacting growth through the supply side, consistent with neoclassical economic theory.

### Spending Link---AT: MMT---AT: Floating Exchange Rate---2NC

#### This doesn’t fix anything.

Palley 20 – Thomas, economist who has served as the chief economist for the United States-China Economic and Security Review Commission, PhD in economics from Yale University.

Thomas Palley, October 2020, "What's wrong with Modern Money Theory: macro and political economic restraints on deficit-financed fiscal policy", Elgar Online: The online content platform for Edward Elgar Publishing, https://www.elgaronline.com/view/journals/roke/8-4/roke.2020.04.02.xml

To the extent MMT discusses international constraints, it dismisses them with the facile assertion that a floating exchange rate resolves them. However, a floating exchange rate has its own adverse financial and inflation complications. Furthermore, if the balance of payments constraint is structural, it can be unresponsive to exchange rate depreciation owing to either induced inflation effects or low import and export elasticities.

### Spending Link---AT: MMT---AT: R<G---2NC

#### This equation is true but still creates constraints on spending.

Krugman 19 – Paul, Professor of Economics at the Graduate Center of the City University of New York and a columnist for The New York Times. 2008 winner of the Nobel Prize in Economics.

Paul Krugman, 2-12-2019, " What's Wrong With Functional Finance? ", New York Times, https://www.nytimes.com/2019/02/12/opinion/whats-wrong-with-functional-finance-wonkish.html

What about debt? A lot depends on whether the interest rate is higher or lower than the economy’s sustainable growth rate. If r<g, which is true now and has mostly been true in the past, the level of debt really isn’t too much of an issue. But if r>g you do have the possibility of a debt snowball: the higher the ratio of debt to GDP the faster, other things equal, that ratio will grow. And debt can’t go to infinity – it can’t exceed total wealth, and in fact as debt gets ever higher people will demand ever-increasing returns to hold it. So at some point the government would be forced to run large enough primary (non-interest) surpluses to limit debt growth.

Now, Lerner basically acknowledges this point. But he assumes that the government always can and will run these surpluses as needed. He dismisses any concern about the incentive effects of high tax rates; certainly Very Serious People grossly exaggerate these effects, but they’re not completely imaginary. And he says nothing at all about the political difficulty of achieving the required surpluses, yet such difficulties seem likely to be central if debt gets to very high levels.

A numerical example may help make the point. Imagine that one way or another we get up to debt equal to 300 percent of GDP, and that r-g = .015 – the interest rate is 1.5 percentage points above the growth rate. Then stabilizing the ratio of debt to GDP would require a primary surplus equal to 4.5 percent of GDP.

That’s not impossible: Britain ran surpluses that big for several decades after Waterloo. But it’s a lot to ask of a modern polity. Are we going to slash Medicare and Social Security? Are we going to impose a value-added tax, not to finance new programs, but simply to service the debt? It’s possible, but you do have to wonder whether the temptation to engage in some form of financial repression/debt restructuring/inflation would prevail. And more to the point, investors would wonder about that, pushing r-g even higher.

The bottom line is that while functional finance has a lot going for it, it’s not the kind of axiomatically true doctrine that Lerner – and, I think, modern MMTers – imagined it to be. Deficits and debt can matter, and not just because of the effects of deficit spending on aggregate demand.

That said, I don’t think these objections are all that central to the budget issues facing progressives in the near future. You don’t have to be a deficit scold or debt-worrier to believe that really big progressive programs will require major new revenue sources. But I’ll explain that in my next post.

### Spending Link---AT: MMT---AT: Taxable Currency Retention---2NC

#### Retaining some local currency to pay taxes doesn’t sustain a currency’s value.

Edwards 19 – Sebastian, Chilean economist, Professor of International Business Economics at UCLA, former Chief Economist for the Latin America and Caribbean Region of the World Bank, research associate of the National Bureau of Economic Research, a member of the advisory board of Transnational Research Corporation and co-chairman of the Inter American Seminar on Economics, former President of the Latin American and Caribbean Economic Association.

Sebastian Edwards, 2019, "Modern Monetary Theory: Cautionary Tales from Latin America", Cato Institute, Cato Journal Vol. 39 No. 3, https://www.cato.org/cato-journal/fall-2019/modern-monetary-theory-cautionary-tales-latin-america

A full assessment of the weaknesses of MMT is beyond the scope of this article. However, the fact that, as documented in Table 1, most of its policy recommendations are similar to those of Latin American populists should be a cause for concern to observers of the global economy. As pointed out, the easiest way to think conceptually about MMT is that it suggests policies that simultaneously shift the IS and LM curves to the right. Of course, that is a possibility that all undergraduate students of macroeconomics, at one point or another, contemplate as a theoretical possibility. Although that policy mix — expansive fiscal and monetary policies — may seem attractive to the novice, it is full of dangers that have been identified through the years by successive scholars. Such policies are not only likely to generate inflationary pressures once aggregate demand exceeds supply constraints, but they are also expected to generate higher interest rates. In addition, it is highly probable that they will result in a higher risk premium and in currency depreciation. The latter will be passed through to prices, further fueling inflation.

The fact that, by law, taxes have to be paid with local currency — a point emphasized time and again by MMT supporters, on the basis of work done by German economist G. F. Knapp in 1904 — does not mean that the demand for local currency is insensitive to rapid losses in value. Indeed, as the histories of the countries analyzed in this article show, once inflation reaches a certain threshold there is usually a rapid collapse in the demand for cash and bank deposits, or what economists know as M1.

#### The overwhelming empirical record proves.

Edwards 19 – Sebastian, Chilean economist, Professor of International Business Economics at UCLA, former Chief Economist for the Latin America and Caribbean Region of the World Bank, research associate of the National Bureau of Economic Research, a member of the advisory board of Transnational Research Corporation and co-chairman of the Inter American Seminar on Economics, former President of the Latin American and Caribbean Economic Association.

Sebastian Edwards, 2019, "Modern Monetary Theory: Cautionary Tales from Latin America", Cato Institute, Cato Journal Vol. 39 No. 3, https://www.cato.org/cato-journal/fall-2019/modern-monetary-theory-cautionary-tales-latin-america

Inflation. The data in these tables show that inflation was, eventually, extremely high in the four episodes. In Chile it surpassed 500 percent in 1973; in Peru, it reached hyperinflation levels — it exceeded 7,000 percent in 1990 — and in Venezuela it surpassed 130,000 percent in 2018. The IMF expects inflation in Venezuela to reach the 1,000,000 percent annual mark in 2019. As noted earlier, very high inflation feeds back into the fiscal deficit through the Tanzi‐​Olivera effect. When inflation is very high, indexation tends to become generalized, and wages are adjusted at increasingly shorter intervals. This means that the government wage bill — which in all of these countries was very substantial — increased rapidly, while taxes were assessed and paid based on lagged (and much lower) prices. In all of these cases a collapse in the demand for domestic money (or an increase in velocity) contributed significantly to the explosion of inflation. In Chile, for example, velocity in 1973, at the end of the Allende government, was 24 “times” per year, which was two times higher than the historical pre‐​Allende average of 12 times.23 Interestingly, during the last decade, velocity in Chile has been around 3 times.

One of the most serious weaknesses of MMT is that it ignores the role played by the demand for money in macroeconomic outcomes. Economists have known for a long time that, as Patinkin (1965) masterfully emphasized, what matters is the excess supply (demand) in different markets. In his MMT Primer, Wray (2015: 254) declares that he is surprised by the notion that during a hyperinflation economic agents reduce their holdings of domestic money to a minimum. The absence of a prominent role for the demand for money (and changes in velocity) in the theoretical construct of MMT is, indeed, surprising. In Chapter 13 of the General Theory, Keynes explains that people hold money for three motives: transactions‐​motive, precautionary‐​motive, and speculative‐​motives (Keynes 1936: 168). He further argues that the demand for money (or liquidity preference) is a function of the rate of interest. He explicitly writes M = L(r). Economists have known, since at least Irving Fisher, that higher inflation results in higher r. Thus, a rapid increase in inflation will generate a greater excess supply for money, which will be mirrored by an excess demand for goods and bonds (here I am following Patinkin’s analysis); the excess demand for goods, in turn, will put pressure on prices. MMTers believe that because taxes have to be paid in domestic currency the demand for local money cannot decline precipitously. The experiences of the three countries discussed here show that this is not the case. Indeed, and as a large number of economists have pointed out throughout history, when the value of the local currency erodes quickly, holdings of it are reduced to a minimum and velocity increases rapidly.

### Spending Link---AT: MMT---AT: Under-utilized Resources---2NC

#### Inflation doesn’t only happen at full employment, MMT advocates ignore the role of shifting expectations.

Palley 20 – Thomas, economist who has served as the chief economist for the United States-China Economic and Security Review Commission, PhD in economics from Yale University.

Thomas Palley, October 2020, "What's wrong with Modern Money Theory: macro and political economic restraints on deficit-financed fiscal policy", Elgar Online: The online content platform for Edward Elgar Publishing, https://www.elgaronline.com/view/journals/roke/8-4/roke.2020.04.02.xml

3.2.3 Inflation and the Phillips curve

Another problem is that inflation does not work as MMT describes. According to MMT, government should run money-financed budget deficits until all real resources are employed. At that stage, the economy becomes supply-constrained and policy should step on the budget brake to prevent emergence of inflation. Inflation is therefore presented as a ‘threshold’ problem, but that is not how inflation develops in the real world. Instead, the economy consists of multiple sectors, and some hit the full employment barrier before others. Consequently, inflation starts bubbling up before there is aggregate full employment, and government lacks the capacity to target its demand injections sector by sector and market by market. Contrary to the claims of Wray (1998, p. viii), it is not easy to have full employment without inflation, and policymakers confront an inescapable inflation–unemployment trade-off.17

Replacing the threshold model of inflation with a Phillips curve introduces the familiar policy challenges of trade-offs and inflation expectations. As argued earlier, those expectations are influenced by policy regime and they are likely to be adversely impacted by adoption of an MMT policy regime. Furthermore, in an economy with a backward-bending Phillips curve (Rowthorn 1977; Akerlof et al. 2000; Palley 2003), excessively expansionary money-financed deficits could cause inflation expectations to jump to the positively sloped portion of the Phillips trade-off where higher inflation generates higher unemployment.

Interestingly, and not well advertised by proponents of MMT, such concerns prompted Lerner (1977; 1978) to significantly qualify his system of functional finance. In particular, Lerner was concerned about the problem of inflation posed by full employment, which prompted him to develop his wage-increase permit (WIP) plan whereby the government would limit inflation by issuing tradeable permits allowing wage increases.18 Ironically, MMT proponents tend to be especially dismissive of the problem of inflation despite Lerner's concern with inflation at full employment.

### Spending Link---AT: MMT---AT: Zero Interest Rate---2NC

#### Keeping interest rates at zero forever would help with the debt but would also blow up the economy.

Palley 20 – Thomas, economist who has served as the chief economist for the United States-China Economic and Security Review Commission, PhD in economics from Yale University.

Thomas Palley, October 2020, "What's wrong with Modern Money Theory: macro and political economic restraints on deficit-financed fiscal policy", Elgar Online: The online content platform for Edward Elgar Publishing, https://www.elgaronline.com/view/journals/roke/8-4/roke.2020.04.02.xml

3.2.4 Inflation, interest rates, and the policy mix

Introducing a Phillips curve introduces inflation, and inflation affects the real interest rate, which then unravels MMT's approach to interest rate policy. MMT recommends parking the nominal interest rate at zero (Wray 1998, p. 87; 2007, p. 22; Forstater and Mosler 2005), which implies real rates would fall as the economy moves up the Phillips curve.19 That potentially creates an unstable situation in which higher inflation creates lower real interest rates which in turn drives higher inflation. The converse problem would hold if the economy moved down the Phillips curve as real interest rates would rise with unemployment, potentially causing even higher unemployment.

Recognizing that interest rates matter introduces the familiar fiscal-policy–monetary-policy mix problem which was a central concern of Old Keynesians, and which is another concern that is entirely neglected by MMT. The greater the emphasis on fiscal looseness, the more the need to raise real interest rates to avoid excessive AD. However, higher interest rates negatively impact investment and growth. Consequently, a government that is concerned about growth and future living standards will be concerned about budget deficits and their implications for interest rates, which in turn means it is financially constrained and concerned about bond market sentiments.

The problematic of the policy mix also connects with another Neo-Keynesian concern regarding portfolio crowding-out (Haliassos and Tobin 1990, pp. 893–894), which is different from Monetarist crowding-out. Monetarist crowding-out concerns the impact of deficit-financed fiscal policy on AD and output. Portfolio crowding-out concerns the impact of deficit-financed fiscal policy on wealth composition. In particular, if the demand for wealth is finite and government financial obligations are net wealth, government deficits can crowd-out private capital accumulation by increasing the supply of government wealth that must be held in private portfolios.

Restoring activist interest rate policy does not save MMT. Indeed, the opposite is true. If policymakers are concerned about interest rates, they need to be concerned about the state of the interest rate spectrum, of which the policy rate is part. That means policymakers need to be concerned about financial market conditions, which implies government is not financially unconstrained. Furthermore, maintaining an interest rate target requires issuing government financial obligations, and government needs to be concerned about the impact of that issuance on AD and financial markets. Again, government is not unconstrained.

### Wage Link---2NC

#### The plan would spike wages.

Shambaugh et al 18 – Jay Shambaugh, director of The Hamilton Project and a senior fellow in Economic Studies at the Brookings Institution, a Professor of Economics and International Affairs at the Elliott School of International Affairs at The George Washington University, Member of the White House Council of Economic Advisers (August 2015–January 2017) Ryan Nunn, Policy Director, The Hamilton Project; Fellow, Economic Studies, the Brookings Institution, doctorate in Public Policy and Economics from the University of Michigan, Jimmy O’Donnell.

Ryan Nunn, Jimmy O’Donnell, and Jay Shambaugh, 2018, Labor Market Considerations for a National Job Guarantee, The Brookings Institute, https://www.hamiltonproject.org/wp-content/uploads/2023/01/JobGuarantee\_FP\_web\_20190206.pdf

In addition to boosting employment directly, some programs may counteract declining worker bargaining power and thereby improve labor market outcomes. Deterioration in the real value of the federal minimum wage, the decline of private-sector unions, and increasing returns to skill have contributed to stagnant wages (Shambaugh et al. 2017). A job guarantee, for example, would provide low-skilled workers with an additional outside option, potentially improving their bargaining position when negotiating wages with private employers (PDH 2018).

If public jobs are provided at higher wages or under superior conditions to some jobs in the private sector, such a program could either absorb workers with poor outcomes in the labor market or put pressure on the private sector to improve wages and conditions. Alternatively, wage subsidies provided to workers (e.g., the EITC) can also lift the labor market outcomes of those in low-wage jobs. Policies that lift the minimum wage could also improve outcomes for low-wage workers, though unlike a job guarantee, a minimum wage could reduce employment if firms are unwilling to pay the higher wage. Finally, training or education policies could be used to lift workers’ skills and increase their wages as their productivity rises.

### Wage Link---Inequality Links

#### Solving inequality via wage increases is inherently inflationary.

Matt Bruenig 18, American lawyer, blogger, policy analyst, commentator, and founder of the left-leaning think tank People's Policy Project, blogger for the American think tank Demos covering politics and public policy and has written on issues including income distribution, taxation, welfare, elections, and the Nordic model, “Some Notes on Federal Job Guarantee Proposals,” People's Policy Project, 3-22-2018, https://www.peoplespolicyproject.org/2018/03/22/some-notes-on-federal-job-guarantee-proposals/

Inflation Contradictions

Arguments for job guarantees often contain contradictory claims about what effect it would have on inflation, the labor market, and labor demand generally. In most JG advocacy, it is simultaneously claimed that the job guarantee would employ large numbers of people without creating inflation problems and that it will create more competition for workers and thereby bid up private sector wages. Needless to say, these two things are at odds with one another.

Here’s Paul:

[1] The job guarantee would function as a de facto floor in the labor market, greatly increasing the bargaining position of workers throughout the economy. For private employers to attract employees, they would have to offer a job that is at least as good as the one offered by the government. … [2] With a job guarantee policy in place, the Federal Reserve can conduct monetary policy without promoting rising levels of unemployment. In this scenario, the job guarantee program can maintain employment and consumption expenditures while the Federal Reserve employs monetary policy to reduce private investment in order to cool the economy. … The job guarantee would function as a robust automatic stabilizer in the economy, maintaining levels of employment during economic downturns through direct hiring, and freely allowing workers to flow from the jobs program to the private sector during economic boom times.

The first statement suggests that the JG will actively compete for workers in the private sector. That is, the JG will lure workers out of their private jobs through superior compensation, thereby creating wage inflationary pressures. In his Nation piece, Sean McElwee makes this claim very explicitly, saying that nurses could quit their jobs at hospitals to work a JG job and that this would put upward wage pressure on the nursing profession.

The second statement suggests that the JG will act as a buffer that absorbs workers in economic downturns and releases them in economic upturns. In this construction, the plan is not inflationary as it does not compete with private sector employment, but only scoops up those who would otherwise not be employed.

This is a tension that runs throughout the JG world.

### Wage Link---Causes Inflation---2NC

#### Wage increases are by far the most important cause of inflation.

Nageswaran 20 – Venkatramanan Anantha Nageswaran is an Indian economist and the 18th Chief Economic Advisor to the Government of India.

Venkatramanan Nageswaran, August 30 2020, “Only a shift in labour’s bargaining power can light up US inflation,” Financial Times, https://www.ft.com/content/c0cd89a2-28d1-4bf3-a824-183b808aba42

Together with its support of the fiscal deficit through the continued purchase of Treasury securities, and with the purchase of risky instruments across the spectrum, the Fed is fostering bubbles in financial assets. Inflation will remain tame, despite the acronym changing from FIT to FAIT, as long as the balance of power is tilted against labour. For inflation to raise its head, labour needs to acquire pricing power. Until then, money creation will simply juice assets and make them a bigger source of instability. We shall see if a new administration tilts the balance. If it does, then along with fiat money debasement, the inflation fire will be lit. That could be the last straw for the US dollar. The return of inflation will also end asset price inflation. Investors should be prepared for the return of the 1970s; perhaps worse, with social turmoil accompanying stagnant growth and high inflation. Emerging markets will have a new problem this decade — that of managing the appreciation of their currencies. They can and should pay down their debts and focus on supporting consumption through domestic production, as currency strength would be a drag on exports. Those that execute that strategy well will find favour with investors. The good news for America is that no other currency is a better store of value than the dollar because the race to debase currencies is global. But that is bad news for investors. The only anti-dollar in the world is gold.

#### Any decoupling between wage increases and inflation is explained by the fact that it didn’t occur because of increased worker bargaining power, the plan changes that.

Jacobs 3/24 – political economist, currently working as an Economist for OMFIF, a Research Analyst at UCL and a Research Consultant at The Brookings Institution.

Julian Jacobs, March 24 2022, “US employment polarisation tempers worker power and inflation,” OMFIF, https://www.omfif.org/2022/03/us-employment-polarisation-tempers-worker-power-and-inflation/

Will tight labour markets in the US contribute to growing inflation? This is a growing concern among a handful of economists and commentators. Last week, the Wall Street Journal fretted that there is a risk of ‘a tight labour market, with demand for workers far outstripping the supply, generat[ing] wage growth that keeps inflation above the Fed’s 2% target.’

At the centre of this problem is the labour market dynamics represented in the Phillips curve. In economics, the Phillips curve describes the trade-offs between inflation and unemployment. As unemployment gets lower and labour markets become tighter, workers start to bargain for higher wages, and this ultimately increases prices in the economy. Conversely, when unemployment is high, inflation tends to be lower.

And yet the Phillips curve appears to have completely disappeared from data – the tight labour markets that followed the 2008 financial crisis were not associated with significant wage gains or inflationary trends. This has left economists to wonder how pronounced the relationship between tight labour markets and inflation really is.

Within today’s context – one where pandemic-induced supply shocks and latent demand have spurred inflation – concern about labour market and inflation dynamics has resurfaced.

This topic came up in a panel hosted by OMFIF to discuss the US macroeconomic forecast for 2022. The participants – Vincent Reinhart, chief economist for BNY Mellon Asset Management, James Sweeney, head of economics for fundamental fixed income at BlackRock, and Mark Sobel, US chair for OMFIF – were particularly focused on the inflation problem and how the Federal Reserve would respond given a rapidly changing macroeconomic climate.

During the discussion, Sweeney spoke directly to the Phillips curve debate, commenting that the anatomy of US labour markets has significance for the persistence of inflation today. He remarked that ‘for all the tight labour markets, labour’s share of income has remained stagnant.’ In other words, despite the presence of low unemployment after the 2008 financial crisis and in the Covid-19 recovery, it does not appear that this low unemployment has been borne out in higher worker negotiating power and thus higher inflation. So, the Phillips curve still does not seem to appear in the data.

And yet, Sweeney is drawing our attention to perhaps one of the most significant economic challenges the US faces right now: the rapidly changing dynamics of the US labour market.

Chief among these dynamics is the phenomenon of employment polarisation, described by economists like Claudia Goldin, Lawrence Katz and David Autor. Since 1980, the US has seen a distinct inequality emerge among new employment, with a rising share of occupations for high-wage and low-wage jobs but a stagnating middle.

Much of this divergence is down to how technological change has impacted the skills that are privileged in the economy. This has meant that ‘higher-skill’ occupations that generally require a university degree are more in demand than ever before – in recent years, this effect has narrowed further to a handful of graduates from top institutions. And 60% of the rise in wage inequality owes itself directly to the changing skills privileged in the economy. This effect has been aided by the spread of digitalisation and it may become more pronounced as artificial intelligence allows employers to substitute labour for capital in many middle-wage occupations. Globalisation too has clearly played a role, yet the impact of digitalisation – accounting for 60% of the rise of skills-biased labour market change – seems to have been far greater, particularly in recent years.

These dynamics, which mirror the labour market shifts in previous technological revolutions, provide a cogent explanation as to why the Phillips curve has broken down and why we once again should not expect tight labour markets to spur more inflation. As middle-wage jobs have decreased as a proportion of the US labour market, many individuals have shifted into high-wage occupations or (more often) low-wage occupations. The result is a growing share of low-wage US workers that often offer services for a high-wage and high-skill technical class.

### Wage Link---Small Business I/L---2NC

#### Wage inflation induced by a jobs guarantee would nuke small businesses.

Summers 18 – Lawrence, Charles W. Eliot University Professor and President Emeritus at Harvard University. Secretary of the Treasury for Clinton and the Director of the National Economic Council for Obama.

Larry Summers, 7-3-18, "A jobs guarantee", https://larrysummers.com/2018/07/03/a-jobs-guarantee-progressives-latest-big-idea/

If the United States could guarantee jobs in even a modestly efficient manner and in a way that significantly increased employment, it would be a very good thing. I want to be enthusiastic about job-guarantee proposals. But at a time when cynicism about government runs strong, it is important for progressives to avoid making promises that they cannot keep. We must rigorously examine the practicality of a job guarantee.

A first question is how much to pay. A program of last-resort employment could likely provide the minimum wage and low benefits. But that will not help those laid off from highly paid manufacturing jobs or those who expect to earn wages well above the poverty line. While such a proposal could help many young people, it is far from clear that it would connect with the principal concerns of Rust Belt adults.

On the other hand, if the guaranteed jobs paid premium wages, say double the $7.25 per hour national minimum wage, they would be an attractive alternative for a quarter or more of the workforce, raising questions of cost and economic disruption.

Suppose a $15 per hour guaranteed job drew 4 million additional people into the workforce and also attracted 10 million existing employees, just one quarter of those for whom it would represent a wage increase. The cost, once benefits, materials and supervisory needs are included, would, conservatively, be $60,000 per worker. That would increase government spending by $840 billion — one-fifth of the current federal total. If wages for the 30 million lower-wage workers who remained in the private sector went up by just $4 per hour, private-sector costs would rise by $240 billion. The burden would largely fall on small businesses and disproportionately hurt restaurants and other major employers of low-wage labor.

#### They’d never be able to out-compete the federal government.

Earle 18 – Peter, economist at AIER, MA in Applied Economics from American University, and an MBA from West Point.

Peter Earle, 11-19-2018, "'Federal Jobs Guarantee' Idea Is Costly, Misguided, And Increasingly Popular With Democrats", Investor's Business Daily, https://www.investors.com/politics/commentary/federal-jobs-guarantee-democrats/

Wage Inflation

Another issue is the wage, which several plans recommend should be (or average) $15 per hour. With the increasing focus on "living wages," it will not be long before program directors discover that $15 per hour goes far further in Alabama than Hawaii, and the tendency will be to equalize cost-of-living disparities up, further increasing already massive costs.

Two other factors: both the CBPP and LEI plans fail to account for the potential disruption to existing businesses — mostly small businesses, the engine of economic growth in the United States — which will inevitably occur when workers earning less than $15 per hour leave their private sector jobs for higher-paying employment with job guarantee placement.

At present, more than 40 million Americans earn less than the proposed guarantee wage of $15 per hour, which could trigger a major shift of the U.S. workforce away from private employment, on to public rolls. It would also effectively force small businesses to compete directly against the federal government on the labor market.

#### Small businesses are key to the economy.

Treece 23 – Dock David Treece is a former licensed investment advisor and member of the FINRA Small Firm Advisory Board

Dock Treece, 2-21-2023, "How Small Businesses Benefit Local Economies", Business News Daily, https://www.businessnewsdaily.com/1298-small-business-good-for-economy.html

Small businesses are an important economic engine for both local communities and the national economy.

A widely cited 2019 report from the U.S. Small Business Administration found that small businesses generated 44% of all economic activity in the country. That same year, small businesses created two-thirds of all jobs in the U.S. In a post-pandemic world, small businesses have been the backbone of economic recovery and job growth.

“Small, locally owned businesses and startups tend to generate higher incomes for people in a community than big, nonlocal firms, which can actually depress local economies,” said Stephan Goetz, professor of agricultural and regional economics at Penn State and director of the Northeast Regional Center for Rural Development, in a statement published alongside the research.

Goetz said his research shows that small businesses directly benefit local economies – much more so than large businesses. This is because big box and large corporations have internal systems for services such as accounting, legal, supply and maintenance that are not necessarily based within the county or state. Small businesses, on the other hand, have to outsource these functions and usually do so to professionals within their local or regional communities – professionals who are likely to spend that money in the same community.

#### They drive innovation and productivity growth.

Rowinski 22 – Martin Rowinski is the CEO of Boardsi, a corporate board recruitment company, and an investor and author

Martin Rowinski, 3-25-2022, "Council Post: How Small Businesses Drive The American Economy", Forbes, https://www.forbes.com/sites/forbesbusinesscouncil/2022/03/25/how-small-businesses-drive-the-american-economy/?sh=2f979c841699

Just as enough tiny droplets of water slowly fill a bucket, the growth of small businesses fills the U.S. economy. Big corporations might get a lot of attention when it comes to creating jobs, but small businesses employ more people and are more resilient when times get tough. Before coming up with something innovative that propelled them into growth, all big businesses once started out small. Not only are small businesses driving the U.S. economy, but they also keep the American dream alive.

According to the U.S. Small Business Association (SBA), small businesses of 500 employees or fewer make up 99.9% of all U.S. businesses and 99.7% of firms with paid employees. Of the new jobs created between 1995 and 2020, small businesses accounted for 62%—12.7 million compared to 7.9 million by large enterprises. A 2019 SBA report found that small businesses accounted for 44% of U.S. economic activity. Without small businesses, the American economy and workforce would be a pretty wild landscape to imagine.

Not only do small businesses provide more jobs, they also bring careers and opportunities. Successful small businesses put money back into their local community through paychecks and taxes, which can support the creation of new small businesses and improve local public services. No matter how small it starts—one, two, five, 10 employees—within that town, the city or the county, your small business creates new economies where once there was nothing.