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#### The United States federal government should substantially expand the scope of the Department of Justice’s authority to oversee antitrust regulations and suits.

#### Dual enforcement authority between the DoJ and FTC creates havoc among antitrust rulings now—it ensures conflicting regulations and dissent which produces confusion and inefficiencies

Cox, 20

(Alyson M. Cox, JD from Notre Dame Law School, managing articles editor at Notre Dame Law School, “From Humphrey’s Executor to Seila Law: Ending Dual Federal Antitrust Authority,” 96 Notre Dame L. Rev. 395 (2020) NL)

In the summer of 2019, the Department of Justice and Federal Trade Commission announced that they would be dividing the investigations into four of the biggest American tech firms, with the DOJ investigating Google and Apple and the FTC investigating Amazon and Facebook. Senator Mike Lee was among the decision's many critics; he argued that the "splitting of this tech antitrust review across two federal agencies, despite the many similar competition issues that will be investigated, illustrates the absurdity of having two federal agencies handling civil antitrust enforcement."1 But even this "brokered peace didn't last long," 2 and it soon became clear that the DOJ and FTC would be conducting overlapping investigations.3 The DOJ and FTC have shared civil antitrust enforcement since the early 1900s,4 and although their authority is not identical, "the core of the agencies' jurisdiction is congruent." 5 This dual enforcement structure has been continuously challenged for the better half of the last century by both academics and government actors,6 although conventional wisdom holds that elimination of either agency's civil antitrust authority would be politically costly.7 There are well-recognized efficiency costs to the dual enforcement structure, including the expensive and time-consuming merger-clearance process. 8 The two agencies often compete in "turf wars" over cases,9 and have even filed amicus briefs against each other in federal court,10 raising serious questions of government efficiency and procedural and substantive fairness. But in addition to the well-worn complaints about efficiency and fairness, there are significant, mounting reasons to subject this dual enforce-ment authority to constitutional evaluation, especially in light of recent doctrinal shifts regarding the constitutionality of independent agencies. Last term, the Supreme Court held in Seila Law that the independence of the Consumer Financial Protection Bureau (CFPB) was an unconstitutional violation of the separation of powers, shrinking Humphrey's Executor down to a very thin, very wobbly protection of the FTC's constitutionality. Aggrieved parties are already challenging FTC actions on a range of constitutional grounds,11 and the majority opinion in Seila Law provides a roadmap for doing so. This Note catalogues and proposes solutions to both the traditional concerns of efficiency and fairness and the modern constitutional problems posed by the current dual enforcement structure. Part I will compare the two antitrust agencies on the basis of their structures, accountability, statutory authority, and enforcement procedures, as well as evaluate potential concerns with vesting either agency with the sole authority to enforce civil antitrust laws. Part II will evaluate the perils of the current dual enforcement structure, exploring both the traditional arguments about efficiency and fairness and the modern constitutional challenges. Part III will evaluate potential legislative solutions to the problem of dual antitrust enforcement authority in the United States. The constitutionality of the FTC's status as an independent agency is again under serious question; it is time for Congress to seriously rethink and restructure civil antitrust authority accordingly.

#### That uncertainty ruins tech companies—tanks investment and R&D necessary for effective innovation

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Thus, dual enforcement has greater risks than ever before, both because disagreement is more likely and costs of uncertainty are greater. This subpart outlines this potential for uncertainty in a variety of areas of antitrust doctrine. In fact, the risk is not just potential. The DOJ and FTC already disagree on the important issue of how to regulate SEPs, creating uncertainty in a growing industry worth billions of dollars.46 The agencies are additionally fighting over who should take the lead in regulating high tech, resulting in divergent investigations when antitrust analysis requires consideration of the entire competitive market to reach sound conclusions. 47 1. The Need for Certainty in Antitrust Regulation of Technology

A unified approach to antitrust regulation is especially important when it comes to the technology industry for three reasons. First, the rapidly growing technology industry is at the center of the U.S. economy: in 2018, the internet sector accounted for $2.1 trillion of the economy and 10 percent of the GDP. 48 Uncertainty about antitrust rules created by dual enforcement hinders economic growth.

Second, technological industries are especially sensitive to shifts in antitrust policy because antitrust actions can change the trajectory of fast-changing industries. For instance, the DOd's antitrust enforcement action against the Bell System broke up the monopoly in telephony. 49 One court later summarized the effect as "an unprecedented flowering of innovation" in the telecom industry.50 Agency antitrust action also played a large role in the growth of software, browser, and web company competition. 5 1 In anticipation of a Justice Department antitrust suit, 52 IBM unbundled its software and hardware products in the 1960s,53 dramatically changing the software market. Nearly overnight, software went from a typically free good to a commercial product.54 Governmental antitrust enforcement is additionally credited for Microsoft's 1997 investment in its rival company Apple, which saved the then-nascent company from the brink of bankruptcy. 55 Microsoft likely acted in self-preservation because it faced antitrust scrutiny that came to a head in a DOJ suit the year after.56 The Microsoft settlement itself is "credited with giving web companies like Google-and browsers like Google Chrome . . . space to grow." 57 These actions changed the technological landscape, and future antitrust decisions regarding technology companies will have just as significant of an impact, if not more.

Moreover, antitrust policy is very important to the research and development that is the heart of innovation in tech, particularly as more research and development has moved from the public sector to the private sector.58 Private companies are affected more directly by antitrust policies. 59 Even the financing of technology is dependent on antitrust law. Today, as discussed in more detail below,60 the primary reason a tech start-up receives funding from investors is its acquisition potential; merger and acquisition policies play a significant role.61 Once again, certainty here is important for investors, and possible and actual conflicts between DOJ and the FTC reduce certainty.

Third, a unified approach to antitrust has become more important because the antitrust issues affecting tech are particularly complex; it is difficult to determine how best to apply antitrust law to emerging technologies. 62 This challenge makes it more likely that DOJ and the FTC will proceed on different theories, increasing uncertainty. For instance, antitrust scholars and regulators have struggled to apply the traditional small but significant non-transitory increase in prices (SSNIP) test to zero-price tech markets.6 3 The SSNIP test, used by both the FTC and DOJ, defines a relevant antitrust market as the "smallest grouping of products for which a hypothetical monopolist could profitably impose a 5% price increase." 64 However, many technology platforms offer their products at no monetary cost to customers. The lack of measurable price renders the SSNIP test difficult to operationalize. 65 This complexity makes it more likely that the DOJ and the FTC will apply the test differently, resulting in uneven and unfair outcomes. SSNIP is only one of many areas of debate regarding how antitrust is to be applied to technology. Technology has raised questions regarding whether increased prices or decreased output is still a viable measure of monopoly. As an example, Facebook has not raised prices or restricted output since its founding, despite plausible claims that it dominates social media.66 While dominant platform companies like Amazon have been accused of levying monopoly power,67 others claim that platform giants and their house brands actually keep prices low. 68

Even defining the market of technology companies raises novel conundrums. To illustrate, Google has a very large share in the market for horizontal search (searches across the internet), but not in general search: users often turn to specialized websites, such as eBay or Amazon, for product searches. 69 Even if horizontal search is the defining market, Google's large share does not necessarily beget monopoly power. Consumers can easily switch between search engines and spend most of their time on websites, which compete with search engines for advertising revenue.70 Addressing these complex issues requires careful coordination between the DOJ and FTC, which based on the agencies' histories, is difficult at best and unachievable at worst.

#### The division of power ruins the DOJ’s foreign policy signaling and radically weakens national security—the FTC consistently rules against the US’ best interests, which guarantees we lose the tech race to China and causes Huawei to gain an international foothold

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ANTITRUST ENFORCEMENT SHOULD BE CONSOLIDATED WITHIN THE DEPARTMENT OF JUSTICE

With the understanding that dual enforcement cannot continue, this Part explains why antitrust enforcement is best placed under the DOJ's Antitrust Division. We first show that the DOJ, not the FTC, should be the choice because antitrust now has serious foreign policy and national security ramifications in our technological era that must be handled by an agency directly responsible to the president, who controls the numerous other mechanisms for dealing with such issues. 247 We next show that removing the FTC from antitrust will have the substantial added advantage of improving its oversight of privacy-a consumer protection matter also given new prominence by technology.

A. Antitrust Policy Increasingly Implicates Foreign Policy

Antitrust law has always affected foreign policy. That much is evident in the various international antitrust organizations and agreements in existence. 248 Enforcement decisions, even those involving only domestic companies, have political and economic ramifications for the United States internationally. 249

However, antitrust law plays a particularly important role in international politics today due to the rise of technology. Technology has revolutionized foreign intelligence and espionage. 2 50 Accordingly, countries have grappled for control of the technology industry, notably China and the United States, 251 initiating "the technology cold war." 252 Both the United States and China have used antitrust regulation to further their position in this technology war. 253 Therefore, technological advancement requires that antitrust enforcement be carefully coordinated with foreign policy.

The executive branch, specifically the president, directs and controls relations with international entities. 254 Thomas Jefferson described the president as "the only channel of communication between the United States and foreign nations." 255 Traditional descriptions of executive power by political writers have necessarily included foreign affairs powers. 256 The Constitution specifically enumerates the president's power to make treaties, appoint ambassadors, and control the army and navy. 257 These designations enable the president to conduct diplomacy with foreign nations. 258 The Supreme Court has affirmed that the president is "the sole organ of the federal government in the field of international relations." 259 The secretary of state, the Foreign Service, and the U.S. Agency for International Development report to the president and carry out his or her foreign policy.2 0 Outside of constitutional grants of power, as a practical matter, the president is generally privy to information relevant to foreign affairs on a more up-to-date basis than other governmental bodies.26 1 His or her constitutional power and comparative information advantage both place the president in a position to direct international relations and safeguard against foreign threats. Therefore, the president must directly oversee antitrust policy to carry out his or her constitutional foreign policy duties.

The president has such direct oversight of the DOJ. The president appoints the attorney general and assistant attorneys general 262 and retains the power to fire these agents at will. 26 3 The Antitrust Division has a particularly hierarchal structure wherein the president appoints an assistant attorney general who oversees the entire Antitrust Division. 2 64 The same cannot be said for the FTC. The FTC is an independent agency, and heads of the agency can only be removed by the president for good cause. 2 65 The president may exert political pressure on the FTC as an independent agency to take a specific action, but he is not able to direct the agency in the same way. 266 And, since the Supreme Court upheld the constitutionality of the independence of the FTC, 267 the president has never fired any commissioner. 268

Under dual antitrust enforcement, the president is thus ~~handicapped~~ [constrained] in his or her direction of antitrust policy. The FTC and DOJ jointly represent the United States in multiple international antitrust organizations, such as the Internal Competition Network269 and Competition Committee of the Organization for Economic Cooperation and Development. 270 The FTC has the power to enforce its antitrust judgments abroad,271 which further hinders the president's ability to form cohesive international policies. Further, the FTC does not distinguish between its international and domestic activities. 272 After the agency determines its enforcement policies, it "enforces them to the fullest extent of its jurisdictional authority, whether foreign or domestic."273 This could give rise to antitrust decisions that cut against the nation's best interest. Antitrust policy is a tool in the toolbox when it comes to navigating a complex global economy and political landscape. It should be used in the context of the country's overall international policies and goals.

FTC v. Qualcomm reveals how international relations and national security are intertwined with antitrust policy. 274 Opposing the district court's decision in the case successfully brought by the FTC, the DOJ argued that the antitrust enforcement action harmed Qualcomm's ability to compete and so posed a serious national security threat.275 As support, the agency cited to statements by the Departments of Defense and Energy. 276 Through various departments, the executive branch has taken strong steps to protect Qualcomm amidst the technology cold war between the United States and China. This suit threatened to do the opposite.

Qualcomm is the world's largest manufacturer of smartphone chips. 277 It is also the only American company that manufactures such chips, with China-backed Huawei as one of its biggest competitors. 278 These two companies are at the heart of a battle between the United States and China for technological dominance. 279 Qualcomm and Huawei are central to the development of 5G, the new standard network for mobile devices. 280 The outcome of the 5G race will determine whether the U.S. will continue to dominate the technology industry, or if it will "cede that control to China, which sees technological dominance as a way to become a world superpower." 281 National security experts worry that if Huawei dominates the 5G market, it could use its networks for espionage or shut down critical communications. 282 Many lawmakers have also expressed concern with China's rise in technology, fearing a Chinese surveillance state.283

In addressing these threats, President Trump blocked an attempted acquisition of Qualcomm by Broadcom in 2018.284 The president expressed concern that Broadcom, a Singaporean company, would cut off Qualcomm's R&D and enable Huawei to dominate the marketplace. 285 The transaction was blocked through the Committee on Foreign Investment in the United States (CFIUS), a committee comprised of executive branch officers such as the secretaries of the Treasury, Justice, Homeland Security, Commerce, and Defense-all directly responsible to the president.286 CFIUS reviews economic transactions by foreign entities and advises the president, who can block transactions that threaten national security. 287 CFIUS reviews have increased steadily in the last decade and Chinese transactions have accounted for the majority of the investigations.288

Outside of CFIUS, the executive branch imposed restrictions on Huawei and affiliated companies. In 2019, the U.S. Commerce Department placed Huawei on a trade blacklist based on national security concerns. 289 In announcing the action, the secretary of commerce cited a presidential directive ordering the department to be vigilant in protecting national security activities. 290 In 2020, the DOJ indicted Huawei for intellectual property theft and conspiring to steal trade secrets. 291 The international importance of the U.S. actions is underscored by its joining a movement of democracies to isolate Huawei and promote other companies as 5G providers. 292

China has also taken counteractions against U.S. technology, making any mechanism the United States has in this struggle more important. In 2018, Chinese antitrust regulators blocked Qualcomm from acquiring rival chipmaker NXP. 293 The Trump administration had lobbied the Chinese government to approve the deal, which would have allowed Qualcomm to expand into new market areas. 294 In 2019, the Chinese government ordered Chinese public institutions to replace foreign software and computer equipment with domestic suppliers within a few years. 295 In sum, both China and the U.S. have leveraged antitrust regulation to give domestic companies a strategic international competitive advantage. And this technology war is only one part of a broader strained trade relationship between the United States and China.296 The White House has reported that China's market-distorting policies and economic aggression pose a threat to the global economy.297 A 2018 report pointed to state-sponsored IP theft through cyber espionage and forced technology transfer regulations. 298 Since 2018, the two countries have had to negotiate various tariffs and trade agreements. 299

Therefore, it is highly anomalous that the FTC has exercised its prosecutorial discretion to bring an antitrust action against Qualcomm that will-in coordination with China's actions-directly benefit Huawei and aid China in its foreign policy goals, when the president and his advisors are actively pursuing exactly the opposite goal. The problem created by the struggle for technological dominance and antitrust's role in it goes beyond this single case, important as it is. As of 2018, China had nine of the world's top twenty technology companies.300 Big Tech executives have argued that breaking up Big Tech under antitrust law will only help Chinese companies dominate the industry.301 Effectively, they promote a "national champion" view: the nation needs powerful, dominant companies lest a foreign company take the helm. 30 2 Some scholars have criticized national champion policies, stating that any short-term advantages are outweighed by the harm to national innovation. 303 Regardless, the battle over the future of technology shows how antitrust regulation plays a key role in a struggle for technological, economic, and political power-and that the U.S. needs a single, president-coordinated agency to guide the process.

The problem of integrating antitrust with the rest of foreign policy is not unique to China or President Trump. President Barack Obama, like President Trump, accused the EU of pursuing antitrust or regulatory actions against Big Tech in order to help their own tech companies compete.30 4 Some countries in the EU are using state authority to promote national champions to combat U.S. tech dominance.305 For instance, France and Germany have spent significant government resources in attempts to create a European rival to U.S, cloud computing companies.306 France has additionally levied a tax on digital giants, commonly dubbed "GAFA," because it will primarily affect American tech companies Google, Apple, Facebook, and Amazon.30 7 U.S. antitrust regulators must also counter these threats to the American economy and technological dominance when exercising prosecutorial discretion over enforcement actions in the technological arena.

The competition for technological dominance is an enduring fact of our age. Moreover, technology is encompassing more and more important industries, encapsulated in the saying that "software is eating the world."308 It is thus more important today for the nation's antitrust policy to be aligned with other foreign policy actions taken by the executive branch.309 The FTC should not be able to bring antitrust actions when they can cut against the various other international efforts taken by the country.

#### The “Huawei model” is exported to allow a Chinese foothold in US infrastructure development and cyber conflict via built in “kill switches”

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The central security concern rests upon a theoretical proposition that Chinese technology underpinning international communications systems could be weaponised by the Chinese state. The US and its allies, amongst others, distrust the authoritarian Chinese party state and fear its growing technological and military capabilities. Despite being a private firm, observers note Huawei could be co-opted to serve the national security objectives of the Chinese government and forced to facilitate espionage or cyber-attacks (Gilding, 2020). Article 7 of China’s National Intelligence Law of 2017 is particularly cited, which requires that Chinese firms and their employees cooperate with national intelligence agencies lawfully carrying out their work (Girard, 2019). The US government has equivalent powers (Eisenstein & Halpert, 2018).

The risk of espionage would appear on the face of it to be realistic. After all, it is well documented, including in the Snowden and WikiLeaks revelations, that the US and its Five Eyes (Australia, Canada, United Kingdom and New Zealand) partners similarly engage in espionage (Snowden, 2019), including co-opting Apple, Facebook, Google and other firms to collect data (Biddle, 2020). There is no reason to believe China is not doing the same, regardless of the geopolitical climate and regardless of standard government denials. The perennial risks of espionage raise highly technical questions about capabilities of detection and protection. These are relevant questions not only in relation to Huawei, but for all telecommunications systems and the complex global supply chains for equipment and software.

The risk of cyber-sabotage is much more dependent on the state of the geopolitical climate. In a state of contest, confrontation and potential conflict, there is a risk that technically undetectable malicious code or “kill switches” are implanted into 5G networks, which could be used for cyber-attacks on critical infrastructure. Such aggressive actions might have been less likely during previous years when the US and China and other countries were cooperatively engaged in building interdependent economies. Indeed, Huawei has been intent on building its international reputation as a trusted provider of state-of-the-art technology and it would appear to be self-defeating to allow itself to be used as a platform for hostility against its customers. In the new era of geopolitical competition however, featuring new flashpoints of confrontation, economic decoupling and more aggressive positioning by both the US and China, the risks become more likely that firms such as Huawei (or indeed firms on the US side) might be co-opted or compromised for more aggressive security operations. This is not a risk specific to the firm, but a risk of hostile state action.

Looking forward, the security of 5G networks will become even more important for the connected technologies of the future. Indeed, risks will not only be generated by major power geopolitical contest but governments will also need to protect against cyber-attack from other states, terrorist organisations or rogue individuals. Whether Huawei can be enlisted as a partner in protecting against such risks, or whether it is a vector of risk, will depend upon normative perspective. Further, countries along the so-called digital silk road that are cooperating with Huawei to build “smart city” infrastructure may see more opportunities than risks, while observers from liberal democracies will be concerned about how such infrastructure might in turn be used for surveillance and social control. Whether China is exporting authoritarianism along its digital silk road rests upon the question of agency. How safe city or other programs are deployed by host governments is, at the end of the day, a matter for them rather than China (Weiss, 2019). After all, US, European and Japanese firms also export facial recognition technology that could be used to target groups or individuals but are not accused of exporting authoritarianism. This underlines the normative bias that runs through most of the narratives about Huawei.

International relations risk

The Huawei case exposes a critical gap in global governance. Inadequate rules, norms, standards and institutions exist to manage risks of globally interconnected technology. The international community is ill-prepared for the implications of the so-called “fourth industrial revolution” of big data, artificial intelligence and an internet of things, composed of connected devices and networks. The digital economy has emerged at a time of unipolarity in the international system and a weakening commitment from the US, as the dominant power, towards multilateralism. In the early stages of the digital economy, US firms such as Facebook and Google wielded significant, largely unregulated power. While the internet evolved with some private sector oversight of certain rules (such as domain names), it had no agreed set of international norms or standards and certainly no international enforcement. In the absence of rules, norms, standards and institutional enforcement, technologies generating risks have developed ahead of technical capabilities to manage those risks. Indeed, technical experts claim the complexity of telecommunications technology renders it impossible to guarantee against malicious code or backdoors in equipment (Lysne, 2018; Chang, 2020). Nevertheless, the risk of malicious action has not prevented the international community from developing – and abiding by – rules, norms, standards and institutions in numerous areas of strategic importance, from food safety to aviation. The lack of discussion about governance options for emerging technologies is therefore remarkable.

Governance of 5G telecommunications has become embroiled in the US-China geopolitical contest, as has governance of the internet. The US has opposed any expansion of the mandate of the International Telecommunications Union (ITU), one of the oldest international organisations, to govern digital communications. Meanwhile China, has developed a clear ambition to be rule-setter and norm maker in internet governance and cyber sovereignty (Schia & Gjesvik, 2017; Wang, 2020), as well as in other transformational technologies such as blockchain and its applications in finance, manufacturing, transport, food safety and public security (Cai, 2019; Stockton, 2020). Across its “digital silk road” partnerships with developing nations, China has promoted uniform standards for 5G rollout (consistent with those set by the ITU), as well as for artificial intelligence and satellite navigation systems (Chan, 2019). China will likely wield influence amongst its technological partners in the rules, norms and standards that will develop over time. China – together with firms such as Huawei - has been actively promoting its cyber governance model at World Internet Conferences, the ITU, the International Standardisation Organisation and the International Electrotechnical Commission and the two United Nations (UN) working groups, the Group of Governmental Experts and the Open-Ended Working Group. China can be expected to have the support of a significant number of developing countries.

While the US has begun to participate more actively in these forums in recent times, a fundamental clash of world views makes it unlikely consensus can be achieved. The Chinese government’s aims in cyber governance include maintenance of social stability and protection from foreign influence, deemed to require control of domestic information that is perceived as a threat to the regime. Consistent with its combination of Confucian cultural roots and Marxist-Leninist political ideology, the Chinese party states rules “by law”, in contrast with the liberal Western notions, “rule of law” and contested power. China’s approach to cyber governance is therefore focused on the state’s ability to control content, which includes network security, while Western approaches are focused on network security and not content. China proposes global standards for data security, while the US is moving to establish its so-called “Clean Network” to set standards amongst a set of “trusted” partners, which appears to ignore the global interconnectedness of supply chains and in particular data, with the emergence of cloud technologies and electronic commerce that rely upon free flow of data. China and the US also take opposing positions on governance of cyber-warfare capabilities, with China supporting (publicly at least) a UN-supervised ban, while the US prefers the status quo in which it can continue to develop its capabilities (McCarthy, 2019).

The Huawei paradox, combined with the politics of fear and blame during the Covid-19 pandemic of 2020, has amplified the different approaches of the US, with its lack of a governance framework for data security and opposition to multilateral solutions, and China, with its Cyber Security Law and support for global cyber governance. It appears the law of the cyber jungle will persist at the global level while, as will be discussed below, the European Union (EU), with its comprehensive Cybersecurity Act, General Data Protection Regulation (GDPR) and Directive on Security of Network and Information Systems (NIS), models at a regional level the most advanced attempt at rules, norms and standards to guide cyber risk management.

Economic cooperation risk

The denial of supply of advanced semiconductor chips to Huawei by the US appears likely to reinforce China’s geopolitical fears of containment and indeed historic memories of dismemberment by outside powers. Consequently, it can be expected to drive China to double down on its strategy for not only self-reliance and alternative sources of supply but indeed dominance in next generation technologies. It may take some years, but China can be expected to develop a semiconductor industry to rival the US in time. While it is impossible to prove a counterfactual, it has been suggested by Kennedy (2020) that a more “principled interdependence” between US and Chinese supply chains rather than decoupling might have sustained US semiconductor leadership, slowed China’s technological advance and offered opportunities for joint work on risk management. Coercion has been chosen over cooperation in what may yet prove to be a turning point in the deteriorating geopolitical contest between the US and China, which was being extended to impact new firms and new industries at the time of writing.

The economic costs of excluding Huawei alone are considerable. A Huawei-commissioned Oxford Economics report (2019) predicted that restricting Huawei from competitive tenders will lead to increased 5G investment costs of between eight percent to 29 percent over a decade and would have a cost to GDP in 2035 from $2.8 billion in Australia to $21.9 billion in the US. For US semiconductor firms, the export controls on sales to Chinese buyers constitute a major risk to their global business strategies. In a survey of exports in the first four months of 2018, Capri (2018) found Qualcomm relied on China for 60 percent of revenue, Micron over 50 percent and Broadcom about 45 percent. A Boston Consulting Group report forecast a full decoupling with China would reduce the US chip sector revenue by 37 percent and lower its market share to 30 percent, while China’s market share would rise from three percent to 31 per cent (Varas & Varadarajan, 2020). Further, as the geopolitical climate worsens, there is a risk that China will retaliate against US or allied firms. The Chinese government has reportedly drawn up plans to target so-called “unreliable entities”, such as Fedex, which it is alleged allowed shipments of weapons to Hong Kong and mainland China and diverted US packages addressed to Huawei (Wu, 2020). Any tit-for-tat economic coercion between China and the US will pose significant economic risks for third parties if it escalates, as expected, to include more expansive export controls, prosecutions of technology theft and restrictions on joint research and development with Chinese partners (Thomas-Noone, 2020).

Farrell & Newman (2019) coined the phrases “weaponised interdependence” for this phenomenon of a state deploying economic coercion to leverage its asymmetrical power over a global network and “chokepoint effect” to deny network access to an adversary. Now that the US has set the precedent in its campaign against Huawei, how else the tactic might be deployed is not yet clear, with fears in China, for example, that the US could target international payments through its SWIFT system (Zhao, 2020). To be sure, once the process is initiated against a firm or a sector, entire supply chains will be disrupted. The consequent evolution of a new global economy that moves away from market-led globalisation towards state-led spheres of geopolitical influence is uncertain at this point but 2020 may yet turn out to be a tipping point towards a much more geopolitically-infused international business environment. Geopolitical risk analysis is likely to receive much more attention in international business literature.

Risk assessment

The assessment of security, international relations and economic cooperation risks for 5G networks must be made in the context of not only contemporary international relations but over the life of such networks. This means planning for scenarios, including worst case scenarios. The theoretical capability for cyber-attack, for example, might not be a serious risk in some scenarios, but might become a threat in worst case scenarios in which the major powers are escalating confrontation or engaged in conflict. Following his Huawei ban, Australian prime minister, Malcolm Turnbull observed “it’s important to remember that the threat is a combination of capability and intent. Capability can take years or decades to develop … but intent can change in a heartbeat” (Bourke, 2019). The Australian government clearly assessed the risk could become a threat, and therefore adopted a strategy of risk avoidance by banning Huawei all together. Based on distrust of the Chinese party state, the logic of this strategy would be to avoid all critical supply dependencies on China, which has indeed become a common rallying call within the US and some of its allies since.

Any qualitative assessment of risks must take into account two key concepts, likelihood and consequence. The type of political risk will depend on whether the factors generating the risk arise at the firm level, the country level or as a result of the geopolitical environment. Huawei as a firm has been assessed to pose security risks because of the nature of the Chinese party state and the risks are therefore China risks, or geopolitical risks, rather than specific to the firm itself. Equally, the international relations risks that are generated by the case appear to be not simply because of Huawei itself but arise from the diverging interests of the US and China, characterised in particular by the lack of global governance rules, norms, standards and institutions, which have been established and maintained in other sectors, as noted above, from aviation to food security. Further, in relation to economic cooperation risks, Huawei again appears to be simply the trigger case for an emerging trend in the new geopolitical contest for the US and China to deploy economic coercion, to reconfigure supply chains and indeed to reshape globalisation according to geopolitical agendas and, consequently, abandoning the neoliberal and internationalist market-led phase of globalisation that characterised previous decades.

Accordingly, the Huawei case can be assessed as a prime example of geopolitical risk and can therefore only be understood in the context of the international relations, security and consequent economic policies of the major powers. Suppliers and partners of Huawei and indeed any strategically important firms from China or the US must therefore plan to manage geopolitical risks in the current environment. There has traditionally been very little cross-fertilisation between business literature on political risk and international relations literature (Fägersten, 2015), yet this discussion demonstrates that risks for governments, firms and communities in the Huawei case are entirely bound up in questions of international relations and will require new approaches to risk management.

#### Constraining Huawei is key to US warfighting capabilities and maintaining our world lead

Brown, 20

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5G Mobile wireless technology has been evolving for decades since the first generation (1G) in the late 1970s. The value of each generation has increased exponentially, as each enabled so many technology advancements across the commercial sector and military.38 The U.S. introduced 4G and LTE network services in 2008 featuring data transfer rates of ten times those of 3G by leveraging IP networks enabling video and mobile applications. According to a 2018 Recon Analytics report, “the introduction of 4G contributed to 70% growth in the wireless industry between 2011 and 2014, bolstering GDP while increasing jobs in the wireless industry by over 80%. By leading the charge on 4G, the United States was able to build a global ecosystem of network providers, device manufacturers, and app developers that shaped the future of 4G and the experience of all other countries implementing it.”39 Mobile wireless is indicative of the first-mover advantage key technologies empower because the first mover enjoys a network effect setting the foundational infrastructure and specifications for future products. We are now on the cusp of implementing the fifth generation, 5G, which is expected to bring more improvements in speed and reduced latency enabling applications such as autonomous vehicles and other Internet of Things (IoT) innovations such as AI-powered health care. While 5G is much more than the radio access network and the U.S. may, in fact, lead in the applications of 5G, Huawei has an early jump in deployments with claims of over 250,000 5G base stations shipped, as China will be the largest market for 5G with one-third of the 1.2 billion expected users by 2025.40 The military advantages of the world’s most advanced communications infrastructure with leading global market share are many: low-cost, nearly ubiquitous infrastructure; cooperation with the leading equipment and service providers for surveillance or denial-of-service to adversaries; speed and reduced latency for military IoT applications like swarms of drones, to name only a few. 5G serves as the tip of the iceberg as an emerging commercial technology that has dramatic implications for economic competitiveness and military capability.

#### That’s key to prevent Great Power War via tech leadership with China

LSE 21, London School Of Economics and Political Science, 1/28/2021, "The West needs to respond to China's bid for technology dominance: New report," London School of Economics and Political Science, https://www.lse.ac.uk/News/Latest-news-from-LSE/2021/a-Jan-21/The-West-needs-to-respond-to-Chinas-bid-for-technology-dominance-New-report

The authors also argue more needs to be done to protect and control access to Western technologies and reduce dependency on certain Chinese innovations (such as Huawei’s 5G), as well as ensuring such dependency does not recur in the future, for example with advancements in Artificial Intelligence.

The report notes the West still outperforms China in most areas of advanced technology. However, it needs to build upon institutions (eg: legal and trade organisations) that underly and contribute to technological success; prioritise technological innovation in the long-term; strengthen labour forces; and learn from China’s industrial policy, for example in long-term finance and planning.

Commenting on the report, Christopher Coker, Director at LSE IDEAS said: “The desire of states to preserve their information sovereignty is becoming a major policy issue in what is threatening to become a new Cold War. Two sharply defined technological and online systems are emerging which may well govern the future development of AI, big data, quantum computing and 5G and quite possibly determine the future shape of cyber conflict from espionage to warfare.

“Without a common strategy on technology the relationship between western states and China may become increasingly transactional, in the process diminishing their overall security and threatening their digital sovereignty. This report explains the dangers of this happening and advances concrete policy prescriptions to avoid it. Unless countries feel secure, they are unlikely to avoid making the mistakes that in the past too often ended in great power conflict.

#### Otherwise China will continue to test the US and trigger a full-scale nuclear war

O’Hanlon, 20

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As the 2020s begin, the world can breathe a collective sigh of relief that the United States has so far avoided a major military crisis with China. Over the past decade, China challenged the lawful rights of U.S. partners and allies in the western Pacific, built massive artificial island bases in the disputed Spratly Islands, and actively sought control over all the waters, seabed, and airspace of the South China Sea. Yet the United States has maintained its access to those waters, deterred any major Chinese use of force against its neighbors, and helped support the efforts of Japan to maintain administrative control over the disputed Senkaku Islands in the East China Sea. U.S. strategy has been notably less successful in preventing China from robbing Southeast Asian partners, including U.S. ally the Philippines, of their resources and rights in the South China Sea. But the United States has at least slowed China’s advance while avoiding war. It would be unwise, however, to assume that the status quo is stable. Deterrence has not failed—yet. China is unlikely to do something as brazen as forcefully denying U.S. Navy or commercial ships access to the South China Sea, attacking American or Japanese bases, or intentionally sinking Filipino sailors in disputed waters. But Beijing continues to probe and test U.S. and allied resolve, provoking low-level crises which could easily escalate. Current U.S. strategic thinking could trigger disproportionate responses that would cause such crises to spiral out of control. That is the way World War I began a century ago—and it could happen again. War games seem to confirm these historic lessons. One of us has taken part in numerous simulations over the last five years asking seasoned experts and officials to role-play how Chinese, Japanese, Filipino, and American leaders might respond to crises in the South and East China Seas. The results are typically sobering. Some end in a rapid Chinese fait accompli, such as the seizure of a disputed island with minimal cost, while U.S. and allied leaders dither. This type of scenario would lead to considerable damage to international norms, U.S. alliances, and American national security. Even more simulations rapidly escalate into full-scale conflict, bringing China and the United States to the doorstep of nuclear war over stakes that no rational observer would consider worth it. The U.S. national security community tends to view the ability to defeat China (or Russia) in combat wherever an ally might be attacked as an essential goal. Direct defense or prompt reversal of any aggression, no matter how small, are the foundational principles of current strategy. Article 5 of the NATO treaty and similar mutual defense commitments to Japan and the Philippines treat all aggression as an equally existential threat. So in a scenario involving a Chinese landing on the Japanese-administered Senkakus or a threat to the Sierra Madre—a derelict Philippine navy ship intentionally ran aground at Second Thomas Shoal in the Spratlys and now housing a dozen soldiers—American strategic culture most often leads to the conclusion that kinetic action to retake a seized feature or outpost is justified to avoid abandoning an ally and damaging U.S. credibility. But such an escalation, while it should be kept as an option, would be fraught. It might end quickly, amounting to little more than a skirmish, or large-scale conflict between nuclear-armed superpowers could ensue. Both sides would have powerful political incentives to escalate further. Military warning and communications systems might be targeted through cyberattack or other means in a way that sowed confusion. Escalation control could not be guaranteed—history and military scholarship strongly suggest as much, and many war games corroborate it.

#### China is revisionist, hellbent on taking over the world—tech domination is a crucial aspect of that

Brands, 20

(Hal, the Henry A. Kissinger Distinguished Professor of Global Affairs at the Johns Hopkins University School of Advanced International Studies (SAIS) and a Resident Scholar at the American Enterprise Institute "What Does China Really Want? To Dominate the World," 5/20/20 <https://www.bloomberg.com/opinion/articles/2020-05-20/xi-jinping-makes-clear-that-china-s-goal-is-to-dominate-the-world> NL)

Can we pay the Chinese Communist Party the compliment of acknowledging that it means what it says and knows what it wants? That may be the key to understanding Beijing’s strategic ambitions in the coming decades. A long-standing trope in the U.S. [debate](https://warontherocks.com/2018/12/wotr-podcast-full-steam-ahead-naval-competition-with-china/) on [that](https://warontherocks.com/2019/01/the-party-congress-test-a-minimum-standard-for-analyzing-beijings-intentions/) [subject](https://www.brookings.edu/wp-content/uploads/2018/10/fp_20181018_us_china_transcript.pdf) is that China itself doesn’t know what it seeks to achieve, that its leaders haven’t yet worked out how far Beijing’s influence should reach. Yet there is a growing body of evidence, assembled and interpreted by talented China experts, that the Chinese government is indeed aiming for global power and perhaps global primacy over the next generation — that it seeks to upend the American-led international system and create at least a competing, quasi-world order of its own. It doesn’t take unparalleled powers of deduction to reach this conclusion. Top Chinese officials and members of the country’s foreign policy community are becoming increasingly explicit in saying so themselves. President Xi Jinping more than hinted at this goal in his landmark address to the 19th Party Congress in October 2017. That speech [represents](https://www.uscc.gov/sites/default/files/testimonies/SFR%20for%20USCC%20TobinD%2020200313.pdf) one of the most authoritative statements of the party’s policy and aims; it reflects Xi’s [understanding](https://twitter.com/PLMattis/status/1259592233726205953) of what China has accomplished under Communist rule and how it must advance in the future. Xi [declared](http://www.xinhuanet.com/english/download/Xi_Jinping's_report_at_19th_CPC_National_Congress.pdf) that China “has stood up, grown rich, and is becoming strong,” and that it was now “blazing a new trail for other developing countries” and offering “Chinese wisdom and a Chinese approach to solving the problems facing mankind.” By 2049, Xi promised, China would “become a global leader in terms of composite national strength and international influence” and would build a “stable international order” in which China’s “national rejuvenation” could be fully achieved. This was the statement of a leader who sees his country not just participating in global affairs but setting the terms, and it testifies to two core themes in China’s foreign policy discourse. The first is a deeply skeptical view of the existing international system. Chinese leaders recognize that the global trade regime has been indispensable to the country’s economic and military rise. Yet when they look at the key features of the world Washington and its allies have made, they see mostly [threats](https://tnsr.org/2018/11/xis-vision-for-transforming-global-governance-a-strategic-challenge-for-washington-and-its-allies/). In their view, American alliances do not preserve peace and stability; they stunt China’s potential and prevent Asian nations from giving Beijing its due. Seen through that lens, promoting democracy and human rights is neither moral nor benign, but propaganda supporting a dangerous doctrine that threatens to delegitimize the Communist government and energize its domestic enemies. U.S.-led international institutions appear as tools for imposing America’s will on weaker states. The Communist Party recognizes that the liberal international order has brought benefits, [writes](https://www.nbr.org/wp-content/uploads/pdfs/publications/sr83_chinasvision_jan2020.pdf) Nadege Rolland, a senior fellow at the National Bureau of Asian Research, but “the party abhors and dreads” the principles on which it is based. The second theme is that the international order must change — not a little, but a lot — for China to become fully prosperous and secure. Chinese leaders have, understandably, been somewhat opaque in describing the world they want, but the outlines are becoming easier to discern. If one studies the statements of Xi and other top officials, China expert Liza Tobin [concludes](https://tnsr.org/2018/11/xis-vision-for-transforming-global-governance-a-strategic-challenge-for-washington-and-its-allies/), what emerges is a vision in which “a global network of partnerships centered on China would replace the U.S. system of treaty alliances” and the world would view Chinese authoritarianism as preferable to Western democracy. Based on a similar analysis, Rolland [agrees](https://www.nbr.org/wp-content/uploads/pdfs/publications/sr83_chinasvision_jan2020.pdf) that China has “a yearning for partial hegemony,” a loose dominance over large swaths of the global south. When it comes to global governance, still other [examinations](https://www.tabletmag.com/sections/news/articles/china-plans-global-order) [show](https://www.americanprogress.org/issues/security/reports/2019/02/28/466768/mapping-chinas-global-governance-ambitions/), Beijing wants a system in which international institutions buttress rather than batter repressive regimes. Meanwhile, Chinese strategists and academics are talking openly about building a “new China-centric global economic order.” There is little indication, in any of this, that Beijing’s strategic horizon is limited to the Western Pacific or even Asia. Xi’s [invocation](http://www.xinhuanet.com/english/2019-10/03/c_138445509.htm) of a “community with a shared future for humanity” [indicates](https://warontherocks.com/2019/01/the-party-congress-test-a-minimum-standard-for-analyzing-beijings-intentions/) a [global](https://tnsr.org/2018/11/xis-vision-for-transforming-global-governance-a-strategic-challenge-for-washington-and-its-allies/) tableau for Chinese influence. One hardly has to read between the lines to understand that this agenda will require fundamentally resetting the current geopolitical balance. As Xi [remarked](https://www.uscc.gov/sites/default/files/testimonies/SFR%20for%20USCC%20TobinD%2020200313.pdf) several years ago, China must work resolutely toward “a future where we will win the initiative and have the dominant position.” Of course, there’s not need to take literally everything national leaders say, or even everything that makes it into official speeches. In Beijing’s case, however, Chinese leaders are actually saying less than what the country is doing. Whether it is the naval shipbuilding program that is churning out vessels at astonishing rate; the drive to [control](https://www.bloomberg.com/opinion/articles/2020-03-31/china-s-influence-operation-goes-beyond-who-taiwan-and-covid-19) existing international organizations and build new ones; the projection of military power in the [Arctic](https://www.cambridge.org/core/books/china-as-a-polar-great-power/22493FFC041E6739DAED329CCB71F688#fndtn-information), the Indian Ocean and points beyond; the quest to [dominate](https://www.pbs.org/wgbh/frontline/article/made-in-china-2025-the-industrial-plan-that-china-doesnt-want-anyone-talking-about/) the world’s high-tech industries; the ever-more [systematic](https://halbrands.org/wp-content/uploads/2018/09/60-5-07-Brands.pdf) efforts to support authoritarian regimes and weaken democratic institutions; or the Belt and Road Initiative that [encompasses](https://tnsr.org/2019/07/unlocking-the-gates-of-eurasia-chinas-belt-and-road-initiative-and-its-implications-for-u-s-grand-strategy/) multiple continents, China is hardly acting like a country that lacks a grand geopolitical design. As with so many aspects of the U.S.-China competition, there is a Cold War parallel. During the 1970s, some leading American Sovietologists insisted that Moscow was becoming a satisfied, status quo power. Yet that claim required ignoring what Soviet leaders [said](https://www.google.com/books/edition/What_Good_Is_Grand_Strategy/nGqoAgAAQBAJ?hl=en&gbpv=1&bsq=%22we%20make%20no%20secret%22) about detente and peaceful coexistence — that it was a way of ensuring the triumph of socialism without war — as well as their efforts to build military superiority and positions of strength in the Third World. The warning signs were evident then, as they are today. China probably doesn’t have a step-by-step checklist for achieving global primacy, any more than the Soviet Union did in the 1970s. Chinese leaders aren’t insensitive to costs and obstacles: Xi may ritualistically restate the importance of unifying the Chinese nation, but that [doesn’t mean](https://twitter.com/resplinodell/status/1259883799254634498) he’s hell-bent on war over Taiwan. Beijing may not even have decided which of its two paths to global influence is preferable: Establishing dominance in the Western Pacific and then expanding outward from there, or outflanking the U.S. position in the region by building up economic and political power around the world. Finally, China may ultimately fail to accomplish any of this. Perhaps the coronavirus will so weaken the U.S. and the liberal order that China’s ascent will be accelerated. Or perhaps China will run into so many internal problems, and so much external resistance, that its drive will stall. Yet we ought to recognize that the debate about what China wants is growing stale, because China’s leaders and behavior have increasingly answered that question. When a proud and powerful challenger starts to advertise its global ambitions, Americans should probably err on the side of taking those ambitious seriously.

#### Official Chinese doctrines prove that they are revisionist and comparatively worse than the US

Thayer and Han, Bradley A. Thayer Professor of Political Science at the University of Texas San Antonio and is the coauthor of How China Sees the World: Han-Centrism and the Balance of Power in International Politics. Lianchao Han is vice president of Citizen Power Initiatives for China and a visiting fellow at the Hudson Institute. After the Tiananmen Square Massacre in 1989, Dr. Han was one of the founders of the Independent Federation of Chinese Students and Scholars. He worked in the U.S. Senate for twelve years, as legislative counsel and policy director for three senators, 6/12/19

(Bradley and Lianchao, “The ‘Xi Doctrine’: Proclaiming and Rationalizing China’s Aggression”, https://nationalinterest.org/feature/%E2%80%98xi-doctrine%E2%80%99-proclaiming-and-rationalizing-china%E2%80%99s-aggression-62402)

Using the occasion of the Shangri-La Dialogue in Singapore this month, Chinese Minister of National Defense and State Councilor Gen. Wei Fenghe, delivered a sharp message to the United States, which may be termed the “Xi Doctrine” on China’s use of force, after Chinese premier Xi Jinping. Wei declaring both China’s resolve to aggress to advance its interests and a rationalization for the use of force. Wei’s de facto threat of war should not be lost in his nuances, deliberate ambiguity, or in translation. His remarks were so bellicose that the world has noticed, as was certainly intended by the leadership of the Chinese Communist Party (CCP). Empirical evidence of China’s aggression is increasingly common, from its attempt to dominate the South China Sea, the neo-imperialist effort to gain control of states through the Belt and Road Initiative, to its technological imperialism to control 5G and artificial intelligence technologies. What is rather less frequent are statements from high-level Chinese officials proclaiming the country’s intent to be aggressive and offering an attempted legitimizing principle justifying that aggression. While much of the content of Wei’s remarks were in keeping with the gossamer pronouncements on China’s peaceful intentions, as well as a paean to Xi Jinping’s leadership, they still conveyed that China is ready and willing to resort to war if the United States stands in its way of global expansion; and they made clear that China must go to war, or even a nuclear war, to occupy Taiwan. Specifically, there are four elements that comprise the Xi Doctrine and are indications of China’s signaling its willingness to use force. The first component is a new and alarming proclamation of the undisguised threats to use force or wage an unlimited war. China is becoming bolder as its military power grows. This is evidenced in Wei’s muscular remarks on the People’s Republic of China’s approach against Taiwan, his explicit statement that China does not renounce the use of force against Taiwan, and his effort to deter the United States and its allies from intervention should an attack occur. Wei forcefully stated: “If anyone dares to separate Taiwan from China, the Chinese military has no choice but must go to war, and must fight for the reunification of the motherland at all costs.” “At all cost” means that China will not hesitate to use nuclear weapons or launching another Pearl Harbor to take over Taiwan. This is a clear warning of an invasion. Second, the Xi Doctrine legitimizes territorial expansion. Through his remarks, Wei sought to convince the rest of the world that China’s seizure of most of the South China Sea is an accomplished fact that cannot be overturned. He made bogus accusations, which included blaming the United States for “raking in profits by stirring up troubles” in the region. He insisted that only ASEAN and China must resolve the issue. He claimed that China’s militarization on South China Sea islands and reefs were an act of self-defense. Should this be allowed to stand, then the Xi Doctrine will set a perilous precedent of successful territorial expansion, which will further entice China and jeopardize the peace of the region. Third, the doctrine targets the United States as a cause of the world’s major problems and envisions a powerful China evicting the United States from the region. Wei obliquely identified the United States as the cause wars, conflicts, and unrest, and sought to convey that the United States will abandon the states of the South China Sea (SCS) when it is confronted by Chinese power, a typical divide and conquer strategy used by the CCP regime. The Xi Doctrine’s fourth element is the mendacity regarding China’s historical use of force and current actions. While the distortions of history were numerous, there were three major lies that should be alarming for the states of the region and the global community. First, Wei said that China had never invaded another country, which is a claim so transparently false it can only be a measure of the contempt he held for the audience. China has a long history of aggression, including against the Tibetans and Vietnamese, and perhaps soon against the Taiwanese. Second, Wei argued that hegemony does not conform to China’s values when, in fact, China proudly was Asia’s hegemon for most of the last two thousand years. Lastly, he claimed that the situation in the SCS is moving toward stability—from China’s perspective this stability is caused by its successful seizure of territory. In fact, the SCS is far less stable as a result of China’s actions. Efforts to counter this grab are denounced by Wei as destabilizing, which is a bit like a thief accusing you of a crime for wanting your property returned. Wei’s belligerent rhetoric is an indication that the CCP regime faces deep external and internal crises. Externally, the Trump administration has shocked the CCP with the three major steps it has taken. First, it has shifted the focus of the U.S. national-security strategy and now identifies China explicitly as its primary rival—abandoning the far more muted policies of previous administrations. Second, Trump has acted on this peer competitive threat by advancing tangible measures, such as arms sales to allies and the ban of Huawei. Third, the administration has made credible commitments to assure partners and allies to counter China’s aggression and bullying. These have unbalanced the CCP regime, and its natural reaction is to bully its way out. Additionally, the CCP regime has perceived that the world today has begun to consider the negative implications of China’s rise, and the United States is determined to prevent what heretofore had been considered China’s unstoppable rise. From the perspective of CCP, conflict is increasingly seen as inevitable and perhaps even imminent. Wei’s bellicosity should be seen in this light, and the PLA is tasked with fighting and winning the war. Internally, Xi’s anti-corruption campaign that selectively targets his political rivalries, and his abandoning the established rules such as term limited of presidency, have introduced deep cleavages into the unity of the regime unity. China’s economic slowdown, made worse by the U.S. trade war, is a fundamental challenge to the regime’s legitimacy. Xi’s repression and suppression of the Chinese people, particularly human-rights defenders, Christians, Kazakhs, Uighurs, and other minorities, have miscarried. Drawing from the pages of unfortunate history, in a classic social-imperialist move, the regime wants to direct these internal tensions outward. At the same time, the nationalistic fervor advanced by the CCP’s propaganda and by the rapid military modernization have made many young militant officers in the PLA overconfident. This is infrequently noticed in the West. They can hardly wait to fight an ultimate war to defeat the arch-enemy. This plainly dangerous mentality echoes the Japanese military’s beliefs before Pearl Harbor. The bellicosity evinced in Wei’s speech is serious and is not bluster intended to deter. The United States cannot meet China’s threat with half-measures, which are likely to further encourage China’s aggressive behavior. The United States must respond to China’s belligerence with greater strength, adamantine determination, and more vigorous diplomatic and military measures. With the Xi Doctrine, China has proclaimed and rationalized its aggression. A Trump Doctrine forged in response has to reveal to all global audiences, most importantly the CCP leadership, the recklessness of the Xi Doctrine and the supreme folly of aggression.

#### Tech innovation is already securitized and key to hegemony – even the perception we’re falling behind leads to next-gen war

Johnson, 19

(James, Assistant Professor, School of Law & Government, Dublin City University, Non-Resident Fellow, Modern War Institute at the United States Military Academy, West Point, PhD Politics & International Relations, University of Leicester, MA Asia-Pacific Studies, University of Leeds, "The end of military-techno Pax Americana? Washington’s strategic responses to Chinese AI-enabled military technology", Taylor & Francis, 10-21-2019, https://www.tandfonline.com/doi/full/10.1080/09512748.2019.1676299)\\JM

This article has made the following central arguments. First, while disagreement exists on the likely pace, trajectory, and scope of AI defense innovations, a consensus is building within the U.S. defense community intimating that the potential impact of AI-related technology on the future distribution of power and the military balance will likely be transformational, if not revolutionary. These assessments have in large part been framed in the context of the perceived challenges posed by revisionist and dissatisfied great military powers (i.e. China and Russia) to the current U.S.-led international order – rules, norms, governing institutions – and military-technological hegemony. Today, the United States has an unassailable first-mover advantage in a range of AI applications with direct (and in some cases singular) relevance in a military context.

Second, the rapid proliferation of AI-related military-technology exists concomitant with a growing sense that the United States has dropped the ball in the development of these disruptive technologies. Even the perception that America’s first-mover advantage in a range of dual-use enabling strategic technologies (i.e. semiconductors, 5G networks, and IoT’s) was at risk from rising (especially nuclear-armed) military powers such as China, the implications for international security and strategic stability could be severe. In response to a growing sense of alacrity within the U.S. defense community cognizant of this prospect, the Pentagon has authored several AI-related programs and initiatives designed to protect U.S. dominance on the future digitized battlefield (e.g. the Third Offset, Project Maven, the JAIC, and the DoD’s debut AI strategy). Further, broader U.S. national security concerns relating to Chinese efforts to catch up (and even surpass) the U.S. in several critical AI-related enabling technologies, has prompted Washington to take increasingly wide-ranging and draconian steps to counter this perceived national security threat.

Third, and related, in the development of AI evocations of the Cold War-era space race does not accurately capture the nature of the evolving global AI phenomena. Instead, compared to the bipolar features of the U.S.-Soviet struggle, this innovation arms race intimates more multipolar characteristics. Above all, the dual-use and commercial drivers of the advances in AI-related technology will likely narrow the technological gap separating great military powers (chiefly the U.S. and China) and other technically advanced small-medium powers. These rising powers will become critical influencers in shaping future security, economics, and global norms in dual-use AI.

In the case of military-use AI applications, however, several coalescing features of this emerging phenomena (i.e. hardware constraints, machine-learning algorithmic complexity, and the resources and know-how to deploy military-centric AI code), will likely constrain the proliferation and diffusion of AI with militaries’ advanced weapon systems for the foreseeable future. In turn, these constraints could further concentrate and consolidate the leadership in the development of these critical technological enablers amongst the current AI military superpowers (i.e. China and the United States), which could cement a bipolar balance of power and the prospect of resurgent bi-polar strategic competition.

Today, the United States has an unassailable first mover advantage in a range of AI applications with direct (and in some cases singular) relevance in a military context. However, as China approaches parity, and possibly surpasses the U.S. in several AI-related (and dual-use) domains, so the U.S. will increasingly view future technological incremental progress in emerging technologies – and especially unexpected technological breakthroughs or surprises – through a national security lens. Thus, responses to these perceived threats will be shaped and informed by broader U.S.-China geopolitical tensions (Waltz, 1979). These concerns resonated in the 2018 U.S. Nuclear Posture Review (NPR). The NPR emphasized that the coalescence of geopolitical tensions and emerging technology in the nuclear domain, in particular, how unanticipated technological breakthroughs in ‘new and existing innovations,’ might change the nature of the threats faced by the United States and the ‘capabilities needed to counter them.’ (NPR, 2018, p.14). In sum, against the backdrop of U.S.-China geopolitical tensions, and irrespective of whether China’s dual-use applications can be imminently converted into deployable military-use AI, U.S. perceptions of this possibility will be enough to justify draconian countermeasures.

Several future research questions outside the scope of this study would benefit from further study: How might rising powers and nonstate actors leverage AI technologies in ways that threaten the strategic environment of nuclear-armed great powers? How might the diffusion of dual-use AI to medium-small and nonstate actors affect great power strategic stability? As the distribution of military AI capabilities begins to diffuse to small and medium rising powers, independent of poles how might these states behave in the new multipolar order? Related, under what conditions can mastery of a particular technology such AI affect the global balance of power? Less dependent on the U.S. for their security, might rising power be more (or less) inclined to cooperate and form new regional bonds, or instead, grow to fear one another? And, how might the pace of this transition influence this outcome.

#### China is the world’s worst colonizer—they put anti-CCP Uighers in internment camps, actively support the North Korean dictatorship, and demand dystopian facial recognition software to racially target and suppress Muslims—stopping their rise is key

Charlie Campbell 19. East Asia Correspondent for TIME. "The Entire System Is Designed to Suppress Us': What the Chinese Surveillance State Means for the Rest of the World." Time. 11-21-2019. https://time.com/5735411/china-surveillance-privacy-issues/

Still, the risks are considerable. As Western democracies enact safeguards to protect citizens from the rampant harvesting of data by government and corporations, China is exporting its AI-powered surveillance technology to authoritarian governments around the world. Chinese firms are providing high-tech surveillance tools to at least 18 nations from Venezuela to Zimbabwe, according to a 2018 report by Freedom House. China is a battleground where the modern surveillance state has reached a nadir, prompting censure from governments and institutions around the globe, but it is also where rebellion against its overreach is being most ferociously fought.

“Today’s economic business models all encourage people to share data,” says Lokman Tsui, a privacy expert at the Chinese University of Hong Kong. In China, he adds, we are seeing “what happens when the state goes after that data to exploit and weaponize it.”

Some 1,500 miles northwest of where Mrs. Chen recovered her purse, surveillance in China’s restive region of Xinjiang has helped put an estimated 1 million people into “re-education centers” akin to concentration camps, according to the U.N. Many were arrested, tried and convicted by computer algorithm based on data harvested by the cameras that stud every 20 steps in some parts.

In the name of fighting terrorism, members of predominantly Muslim ethnic groups—mostly Uighurs but also Kazakhs, Uzbeks and Kyrgyz—are forced to surrender biometric data like photos, fingerprints, DNA, blood and voice samples. Police are armed with a smartphone app that then automatically flags certain behaviors, according to reverse engineering by the advocacy group Human Rights Watch. Those who grow a beard, leave their house via a back door or visit the mosque often are red-flagged by the system and interrogated.

Sarsenbek Akaruli, 45, a veterinarian and trader from the Xinjiang city of Ili, was arrested on Nov. 2, 2017, and remains in a detention camp after police found the banned messaging app WhatsApp on his cell phone, according to his wife Gulnur Kosdaulet. A citizen of neighboring Kazakhstan, she has traveled to Xinjiang four times to search for him but found even friends in the ruling Chinese Communist Party (CCP) reluctant to help. “Nobody wanted to risk being recorded on security cameras talking to me in case they ended up in the camps themselves,” she tells TIME.

Surveillance governs all aspects of camp life. Bakitali Nur, 47, a fruit and vegetable exporter in the Xinjiang town of Khorgos, was arrested after authorities became suspicious of his frequent business trips abroad. The father of three says he spent a year in a single room with seven other inmates, all clad in blue jumpsuits, forced to sit still on plastic stools for 17 hours straight as four HikVision cameras recorded every move. “Anyone caught talking or moving was forced into stress positions for hours at a time,” he says.

Bakitali was released only after he developed a chronic illness. But his surveillance hell continued over five months of virtual house arrest, which is common for former detainees. He was forbidden from traveling outside his village without permission, and a CCTV camera was installed opposite his home. Every time he approached the front door, a policeman would call to ask where he was going. He had to report to the local government office every day to undergo “political education” and write a self-criticism detailing his previous day’s activities. Unable to travel for work, former detainees like Bakitali are often obliged to toil at government factories for wages as miserly as 35¢ per day, according to former workers interviewed by TIME. “The entire system is designed to suppress us,” Bakitali says in Almaty, Kazakhstan, where he escaped in May.

The result is dystopian. When every aspect of life is under constant scrutiny, it’s not just “bad” behavior that must be avoided. Muslims in Xinjiang are under constant pressure to act in a manner that the CCP would approve. While posting controversial material online is clearly reckless, not using social media at all could also be considered suspicious, so Muslims share glowing news about the country and party as a means of defense. Homes and businesses now feel obliged to display a photograph of China’s President Xi Jinping in a manner redolent of North Koreans’ public displays for founder Kim Il Sung. Asked why he had a picture of Xi in his taxi, one Uighur driver replied nervously, “It’s the law.”

Besides the surveillance cameras, people are required to register their ID numbers for activities as mundane as renting a karaoke booth. Muslims are forced from buses to have their IDs checked while ethnic Han Chinese passengers wait in their seats. At intersections, drivers are ushered from their vehicles by armed police and through Tera-Snap “revolving body detector” equipment. In the southern Xinjiang oasis town of Hotan, a facial–recognition booth is even installed at the local produce market. When a system struggled to compute the face of this Western TIME reporter, the impatient Han women queuing behind berated the operator, “Hurry up, he’s not a Uighur, let him through.”

China strenuously denies human-rights abuses in Xinjiang, justifying its surveillance leviathan as battling the “three evils” of “separatism, terrorism and extremism.” But the situation has been described as a “horrific campaign of repression” by the U.S. and condemned by the U.N. Washington has also started sanctioning companies like HikVision whose facial–recognition technology is ubiquitous across the Alaska-size region. But Western aversion to surveillance is much broader and stems in no small part from abuses like the Facebook/Cambridge Analytica scandal, in which the “scraped” personal information of up to 87 million people was acquired by the political consultancy to swing elections around the world.

China is also rolling out Big Data and surveillance to inculcate “positive” behavior in its citizens via a Social Credit system. In China’s eastern coastal city of Rongcheng, home to 670,000 people, every person is automatically given 1,000 points. Fighting with neighbors will cost you 5 points; fail to clean up after your dog and you lose 10. Donating blood gains 5. Fall below a certain threshold and it’s impossible to get a loan or book high-speed train tickets. Some Chinese see the benefit. High school teacher Zhu Junfang, 42, enjoys perks such as discounted heating bills and improved health care after a series of good works. “Because of the Social Credit system, vehicles politely let pedestrians cross the street, and during a recent blizzard people volunteered to clear the snow to earn extra points,” she says.

Such intrusive government is anathema to most in the West, where aversion to surveillance is much broader and more visceral. Whether it’s our Internet browser history, selfies uploaded to social media, data scavenged from fitness trackers or smart-home devices possibly recording the most intimate bedroom conversations, we are all living in what’s been dubbed a “surveillance economy.” In her book The Age of Surveillance Capitalism, Shoshana Zuboff describes this as “human experience [broken down into data] as free raw material for commercial practices of extraction, prediction, and sales.”

When it comes to facial recognition, resistance is intense given the huge potential for indiscriminate data harvesting. The E.U. is reviewing regulations to give its citizens explicit rights over use of their facial-recognition data. While tech giants Microsoft and Amazon have already deployed the technology, they are also calling for clear legal parameters to govern its use. Other than privacy, there are equality issues too. According to a study by MIT Media Lab, facial-recognition software correctly identified white men 99% to 100% of the time, but that dipped as low as 65% for women of color. Civil-liberties groups are especially uneasy since facial recognition, despite its widespread use by American police, is rarely cited as evidence in subsequent court filings. In May, San Francisco became the first major U.S. city to block police from using facial–recognition software.

Even in China, where civil liberties have long been sacrificed for what the CCP deems the greater good, privacy concerns are bubbling up. On Oct. 28, a professor in eastern China sued Hangzhou Safari Park for “violating consumer privacy law by compulsorily collecting visitors’ individual characteristics,” after the park announced its intention to adopt facial–recognition entry gates. In Chongqing, a move to install surveillance cameras in 15,000 licensed taxicabs has met a backlash from drivers. “Now I can’t cuddle my girlfriend off duty or curse my bosses,” one driver grumbles to TIME.

Russia’s election meddling around the world highlights the risks of commercially harvested data being repurposed for nefarious goals. It’s a message taken to heart in Hong Kong, where millions have protested over the past five months to push for more democracy. These demonstrators have found themselves in the crosshairs after being identified via CCTV cameras or social media. Employees for state airline Cathay Pacific have been fired and others investigated based on evidence reportedly gleaned via online posts and private messaging apps.

This has led demonstrators to adopt intricate tactics to evade Big Brother’s all-seeing eye. Clad in helmets, face masks and reflective goggles, they prepare for confrontations with the police with military precision. A vanguard clutch umbrellas aloft to shield their activities from prying eyes, before a second wave advances to attack overhead cameras with tape, spray paint and buzz saws. From behind, a covering fire of laser pointers attempts to disrupt the recordings of security officers’ body-mounted cameras.

Fending off the cameras is just one response. When Matthew, 22, who used only his first name for his own safety, heads to the front lines, he always leaves his regular cell phone at home and takes a burner. Aside from swapping SIM cards, he rarely reuses handsets multiple times since each has a unique International Mobile Equipment Identity digital serial number that he says police can trace. He also switches among different VPNs—software to mask a user’s location—and pays for protest–related purchases with cash or untraceable top-up credit cards. Voice calls are made only as a last resort, he says. “Once I had no choice but to make a call, but I threw away my SIM immediately afterward.”

The Hong Kong government denies its smart cameras and lampposts use facial-recognition technology. But “it really comes down to whether you trust institutions,” says privacy expert Tsui. For Matthew, the risks are real and stark: “We are fighting to stop Hong Kong becoming another Xinjiang.”

Ultimately, even protesters’ forensic safeguards may not be enough as technology advances. In his Beijing headquarters, Huang Yongzhen, CEO of AI firm Watrix, shows off his latest gait-recognition software, which can identify people from 50 meters away by analyzing thousands of metrics about their walk—even with faces covered or backs to the camera. It’s already been rolled out by security services across China, he says, though he’s ambivalent about privacy concerns. “From our perspective, we just provide the technology,” he says. “As for how it’s used, like all high tech, it may be a double-edged sword.”

Little wonder a backlash against AI-powered surveillance is gathering pace. In the U.S., legislation was introduced in Congress in July that would prohibit the use of facial recognition in public housing. Japanese scientists have produced special glasses designed to fool the technology. Public campaigns have railed against commercial uses—from Ticket-master using facial recognition for concert tickets to JetBlue for boarding passes. In May, Democratic Congresswoman Alexandria Ocasio–Cortez linked the technology to “a global rise in authoritarianism and fascism.”

#### Prioritize big scale impacts and preventing extinction—any other interpretation is arbitrary and just devolves into utilitarianism

Cummisky, 96

(David, professor of philosophy at Bates College, Kantian Consequentialism, pg. 145//shree)

We must not obscure the issue by characterizing this type of case as the sacrifice of individuals for some abstract “social entity.” It is not a question of some persons having to bear the cost for some elusive “overall social good.” Instead, the question is whether some persons must bear the inescapable cost for the sake of other persons. Robert Nozick, for example, argues that to use a person in this way does not sufficiently respect and take account of the fact that he is a separate person, that his is the only life he has.” But why is this not equally true of all those whom we do not save through our failure to act? By emphasizing solely the one who must bear the cost if we act, we fail to sufficiently respect and take account of the many other separate persons, each with only one life, who will bear the cost of our inaction. In such a situation, what would a conscientious Kantian agent, an agent motivated by the unconditional value of rational beings, choose? A morally good agent recognizes that the basis of all particular duties is the principle that “rational nature exists as an end in itself” (GMM 429). Rational nature as such is the supreme objective end of all conduct. If one truly believes that all rational beings have an equal value, then the rational solution to such a dilemma involves maximally promoting the lives and liberties of as many rational beings as possible (chapter 5). In order to avoid this conclusion, the non-consequentialist Kantian needs to justify agent-centered constraints. As we saw in chapter 1, however, even most Kantian deontologists recognize that agent-centered constraints require a non-value-based rationale. But we have seen that Kant’s normative theory is based on an unconditionally valuable end. How can a concern for the value of rational beings lead to a refusal to sacrifice rational beings even when this would prevent other more extensive losses of rational beings? If the moral law is based on the value of rational beings and their ends, then what is the rationale for prohibiting a moral agent from maximally promoting these two tiers of value? If I sacrifice some for the sake for others, I do not use them arbitrarily, and I do not deny the unconditional value of rational beings. Persons may have “dignity, that is, an unconditional and incomparable worth” that transcends any market value( GMM 436)., but persons also have a fundamental equality that dictates that some must sometimes give way for the sake of others (chapter 5 and 7). The concept of the end-in-itself does not support th view that we may never force another to bear some cost in order to benefit others. If one focuses on the equal value of all rational beings, the equal consideration suggests that one may have to sacrifice some to save many.

#### Magnitude is a prior question to probability—threats are real and we must securitize against them

**Elshtain, 03**

(Jean Bethke, Prof. Social and Pol. Ethics – U. Chicago, “Just War Against Terror: The Burden of American Power in a Violent World”, p. 46-48) \*gender and ableist language edited

IN THE IMMEDIATE AFTERMATH of September 11, I said to a friend, "Now we are reminded of what governments are for." The primary responsibility of government is to provide basic security—ordinary civic peace. St. Augustine calls this form of earthly peace tranquillitasordinis. This is not the perfect peace promised to believers in the Kingdom of God, the one in which the lion lies down with the lamb. On this earth, if the lion lies down with the lamb, the lamb must be replaced frequently, as Martin Luther opined with his characteristic mordant wit. 1 Portions of the U.S. Constitution refer specifically to security and public safety. "To ensure domestic tranquillity" was central to what the new order being created after the American Revolution was all about. None of the goods that human beings cherish, including the free exercise of religion, can flourish without a measure of civic peace and security. What good or goods do I have in mind? Mothers and fathers raising their children; men and women going to work; citizens of a great city making their way on streets and subways; ordinary people flying to California to visit the grandchildren or to transact business with colleagues— all of these actions are simple but profound goods made possible by civic peace. They include the faithful attending their churches, synagogues, and mosques without fear, and citizens—men and women, young and old, black, brown, and white—lining up to vote on Election Day. This civic peace is not the kingdom promised by scripture that awaits the end time. The vision of beating swords into plowshares and spears into pruning hooks, of creating a world in which "nation shall not lift up sword against nation, neither shall they learn war anymore," is connected with certain conditions that will always elude us. That vision presupposes that all persons are under one law. But our condition of pluralism and religious diversity alone precludes the rule of one law. Moreover, our condition of fallibility and imperfection precludes a world in which discontents never erupt. That said, the civic peace that violence disrupts does offer intimations of the peaceable kingdom. If we live from day to day in fear of deadly attack, the goods we cherish become elusive. Human beings are fragile creatures. We cannot reveal the fullness of our being, including our deep sociality, if airplanes are flying into buildings or snipers are shooting at us randomly or deadly spores are being sent through the mail. As we have learned so shockingly, we can neither take this civic peace for granted nor shake off our responsibility to respect and promote the norms and rules that sustain civic peace. We know what happens to people who live in pervasive fear. The condition of fearfulness leads to severe isolation as the desire to protect oneself and one's family becomes overwhelming. It encourages harsh measures because, as the political theorist Thomas Hobbes wrote in his 1651 work Leviathan, if we live in constant fear of violent death we are likely to seek guarantees to prevent such. Chapter 13 of Hobbes's great work is justly renowned for its vivid depiction of the horrors of a "state of nature," Hobbes's description of a world in which there is no ordered civic peace of any kind. In that horrible circumstance, all persons have the strength to kill each other, "either by secret machination, or by confederacy with others." The overriding emotion in this nightmarish world is overwhelming, paralyzing fear, for every [person] man has become an enemy to every other and men live without other security, that what their own strength, and their own invention shall furnish them withal. In such condition, there is no place for Industry; because the fruit thereof is uncertain, and consequently no Culture of the Earth; no Navigation, nor use of the commodities that may be imported by Sea; no commodious Building; no Instruments of moving, and removing such things as require much force; no Knowledge of the face of the Earth; no account of Time; no Arts; no Letters; no Society; and which is worst of all, continuallfeare, and danger of violent death; And the life of man, solitary, poore, nasty, brutish, and short. 2 This is Hobbes's famous, or infamous, war of all against all.

#### Debating about potential scenarios that result from a policy are a good educational practice—its key to agency and positive topic specific education

**Junio and Mahnken 13**

(Timothy – Predoctoral Fellow, Center for International Security and Cooperation, Stanford University, PhD in Political Science expected 2013, and Thomas, PhD, Jerome E. Levy Chair of Economic Geography and National Security at the U.S. Naval War College and a Visiting Scholar at the Philip Merrill Center for Strategic Studies at The Johns Hopkins University’s Paul H. Nitze School of Advanced International Studies, “Conceiving of Future War: The Promise of Scenario Analysis for International Relations,” International Studies Review 15(3):374-395, September 2013, accessed 5-16-15 //Bosley)

This article introduces political scientists to scenarios—future counterfactuals—and demonstrates their value in tandem with other methodologies and across a wide range of research questions. The authors describe best practices regarding the scenario method and argue **that scenarios contribute to theory building and development, identifying new hypotheses, analyzing data-poor research topics, articulating “world views,” setting new research agendas, avoiding cognitive biases, and teaching**. The article also establishes the low rate at which scenarios are used in the international relations subfield and situates scenarios in the broader context of political science methods. The conclusion offers two detailed examples of the effective use of scenarios. In his classic work on scenario analysis, The Art of the Long View, Peter Schwartz commented that “**social scientists** often have a hard time [building scenarios]; they **have been trained to stay away from ‘what if?’ questions and concentrate on ‘what was?**’” (Schwartz 1996:31). While Schwartz's comments were impressionistic based on his years of conducting and teaching scenario analysis, his claim withstands empirical scrutiny. **Scenarios—counterfactual narratives about the future—are woefully underutilized among political scientists**. The method is almost never taught on graduate student syllabi, and a survey of leading international relations (IR) journals indicates that scenarios were used in only 302 of 18,764 sampled articles. The low rate at which political scientists use scenarios—less than 2% of the time—is surprising; the method is popular in fields as disparate as business, demographics, ecology, pharmacology, public health, economics, and epidemiology (Venable, Li, Ginter, and Duncan 1993; Leufkens, Haaijer-Ruskamp, Bakker, and Dukes 1994; Baker, Hulse, Gregory, White, Van Sickle, Berger, Dole, and Schumaker 2004; Sanderson, Scherbov, O'Neill, and Lutz 2004). **Scenarios also are a common tool employed by the policymakers whom political scientists study**. This article seeks to elevate the status of scenarios in political science by demonstrating their usefulness for theory building and pedagogy. **Rather than constitute mere speculation regarding an unpredictable future**, as critics might suggest, **scenarios assist scholars with developing testable hypotheses, gathering data, and identifying a theory's upper and lower bounds. Additionally, scenarios are an effective way to teach students to** **apply theory to policy**. In the pages below, a “best practices” guide is offered to advise scholars, practitioners, and students, and an argument is developed in favor of the use of scenarios. The article concludes with two examples of how **political scientists have invoked the scenario method to improve the specifications of their theories, propose falsifiable hypotheses, and design new empirical research programs**. Scenarios in the Discipline What do counterfactual narratives about the future look like? Scenarios may range in length from a few sentences to many pages. **One of the most common uses of the scenario method**, which will be referenced throughout this article, is **to study the conditions under which** **high-consequence, low-probability events may occur. Perhaps the best example of this is nuclear warfare**, a circumstance that has never resulted, but has captivated generations of political scientists. For an introductory illustration, let us consider a very simple scenario regarding how a first use of a nuclear weapon might occur: During the year 2023, the US military is ordered to launch air and sea patrols of the Taiwan Strait to aid in a crisis. These highly visible patrols disrupt trade off China's coast, and result in skyrocketing insurance rates for shipping companies. Several days into the contingency, which involves over ten thousand US military personnel, an intelligence estimate concludes that a Chinese conventional strike against US air patrols and naval assets is imminent. The United States conducts a preemptive strike against anti-air and anti-sea systems on the Chinese mainland. The US strike is far more successful than Chinese military leaders thought possible; a new source of intelligence to the United States—unknown to Chinese leadership—allowed the US military to severely degrade Chinese targeting and situational awareness capabilities. Many of the weapons that China relied on to dissuade escalatory US military action are now reduced to single-digit-percentage readiness. Estimates for repairs and replenishments are stated in terms of weeks, and China's confidence in readily available, but “dumber,” weapons is low due to the dispersion and mobility of US forces. Word of the successful US strike spreads among the Chinese and Taiwanese publics. The Chinese Government concludes that for the sake of preserving its domestic strength, and to signal resolve to the US and Taiwanese Governments while minimizing further economic disruption, it should escalate dramatically with the use of an extremely small-yield nuclear device against a stationary US military asset in the Pacific region. **This** short story **reflects a future event that, while unlikely to occur** and far too vague to be used for military planning, **contains many dimensions of political science theory. These include** the following: **what leaders perceive as “limited,”** “proportional,” **or “escalatory” uses of force**; the importance of private information about capabilities and commitment; **audience costs in international politics**; the relationship between military expediency and political objectives during war; **and the role of compressed timelines for decision making**, among others. The purpose of this article is to explain to scholars how **such stories, and more** rigorously **developed narratives that specify variables of interest and draw on extant data, may** **improve the study of IR.** An important starting point is to explain how future counterfactuals fit into the methodological canon of the discipline. Scenarios as Future Counterfactuals Scenarios may be understood and applied through the existing and widely published framework of counterfactuals. Political scientists almost exclusively focus on historical counterfactuals, **but future counterfactuals exist in the same logical space and offer additional advantages** to the discipline. Richard Ned Lebow, for example, one of the few IR scholars to enter this methodological domain seriously, writes that “counterfactuals are ‘what if’ statements, usually about the past [emphasis ours]” (Lebow 2000:551). While such a definition leaves room to consider future counterfactuals, Lebow focuses on historical ones in his essay. Similarly, in Counterfactual Thought Experiments in World Politics, editors Philip Tetlock and Aaron Belkin focus on historical analysis in their counterfactuals “best practices” chapter although they are not definitionally bound to the past. For them, counterfactuals are “subjective conditions in which the antecedent is known or supposed for purposes of argument to be false” (Tetlock and Belkin 1996:4).2 Another prominent figure in the counterfactual methods literature is James Fearon, whose foundational work on the subject writes the future out of the definition: “counterfactuals make claims about events that did not actually occur” (Fearon 1991:169). Similarly, while his arguments are oriented toward the past, they are relevant for analyzing the future. For instance, when Fearon speaks of hypotheses that may not be tested due to a lack of historical data (thus requiring counterfactuals), his points are logically applicable to the future—another realm in which the desired data do not (yet) exist. One author, Steven Weber, is exceptional and articulates the perspective of scenarios as future counterfactuals. In Tetlock and Belkin's book, Weber writes of “Counterfactuals: Past and Future.” Weber argues that political scientists have a tendency to treat history as overdetermined and, like Lebow, is skeptical regarding what is considered a “fact” versus “non-fact” in historical analysis (Lebow 2000:551). Scholars tend to think of past counterfactuals as logically distinct from future counterfactuals, according to Weber, because in the former case things have actually come to pass. Weber argues that past and future counterfactuals should be considered logically equivalent (see Figure 1) (Weber 1996:277). A common goal of counterfactual historical analysis is to manipulate one variable while trying to keep others constant. As Weber points out, manipulating one variable in a complex system often creates nonlinear consequences and interaction effects that are difficult for researchers to discern. The historical counterfactual thus exists in the same logical space as a future counterfactual; **there may be greater certainty regarding some boundary conditions in the past** (the Earth existed with gravity, the US Government was not overthrown in a revolution, etc.), **but** much of **this background context may be reasonably assumed to be stable in the future**. In addition to the reasonableness of such assumptions in probability terms, **they are also** **methodologically sound**, **because: (i) most background conditions are not dependent or independent variables** of interest in the research at hand; **and** (ii) **if background conditions change, such as with a large exogenous shock, political scientists are likely to ask completely different research questions**. Many other variables of interest, such as those affecting the stability of political, economic, and social systems, are just as tenuous in past counterfactuals as they are in future ones.

#### Preventing war is a prior question to all other impacts

Goldstein, 01

(Joshua, Professor of International Relations at American University “Reflections: The Mutuality of Gender and War," War and Gender, Published by Cambridge University Press, ISBN 0521001803, p. 411-412)

I began this book hoping to contribute in some way to a deeper understanding of war – an understanding that would improve the chacnes of someday achieving real peace, by deleting war from our human repertoire. In following the thread of gender running through war, I found the deeper understanding I had hoped for – a multidisciplinary and multilevel engagement with the subject. Yet I became somewhat more pessimistic about how quickly or easily war may end. The war system emerges, from evidence in this book, as relatively ubiquitous and robust. Efforts to change this system must overcome several dilemmas mentioned in this book. First, peace activists face a dilemma in thinking about causes of war and working for peace. Many peace scholars and activists support the approach, "if you want peace, work for justice." Then, if one believes that sexism contributes to war, one can work for gender justice specifically (perhaps among others) in order to pursue peace. This approach brings strategic allies to the peace movement (women, labor, minorities), but rests on the assumption that injustices cause war. The evidence in this book suggests that causality runs at least as strongly the other way. War is not a product of capitalism, imperialism, gender, innate aggression, or any other single cause, although all of these influence wars' outbreaks and outcomes. Rather, war has in part fueled and sustained these and other injustices. 9 So, "if you want peace, work for peace." Indeed, if you want justice (gender and others), work for peace. Causality does not run just upward through the levels of analysis, from types of individuals, societies, and governments up to war. It runs downward too. Enloe suggests that changes in attitudes towards war and the military may be the most important way to "reverse women's oppression." The dilemma is that peace work focused on justice brings to the peace movement energy, allies, and moral grounding, yet, in light of this book's evidence, the emphasis on injustice as the main cause of war seems to be empirically inadequate. 10

#### That’s particularly true with nuclear war

Folk, 78

(Jerry, Peace Studies Professor, Bethany College Peace Education-Peace Studies Programs, Peace Change 5.1)

Those proponents of the positive peace approach who reject out of hand the work of researchers and educators coming to the field from the perspective of negative peace too easily forget that the prevention of a nuclear confrontation of global dimensions is the prerequisite for all other peace research, education, and action. Unless such a confrontation can be avoided there will be no world left in which to build positive peace. Moreover, the blanket condemnation of all such negative peace oriented research, education or action as a reactionary attempt to support and reinforce the status quo is doctrinaire. Conflict theory and resolution, disarmament studies, studies of the international system and of international organizations, and integration studies are in themselves neutral. They do not intrinsically support either the status quo or revolutionary efforts to change or overthrow it. Rather they offer a body of knowledge which can be used for either purpose or for some purpose in between. It is much more logical for those who understand peace as positive peace to integrate this knowledge into their own framework and to utilize it in achieving their own purposes. A balanced peace studies program should therefore offer the student exposure to the questions and concerns which occupy those who view the field essentially from the point of view of negative peace.

#### No root cause or error replication

Jones and Smith, 11

(David Martin, Senior Lecturer, School of Political Science and International Studies, University of Queensland, Brisbane, Australia, M.L.R., Department of War Studies, King's College, University of London, London, United Kingdom, “Terrorology and Methodology: A Reply to Dixit and Stump,” Studies in Conflict & Terrorism, Volume 34, issue 6, June//shree)

In our original review we particularly took issue with the belief, held by a number of contributors to Critical Studies on Terrorism, and reflected in British and Australian university programs, that conventional terrorism research deliberately conspires both to de-legitimize the critical voice and marginalize the non-Western “other.” In this regard, we found that critical theory engages in sweeping generalizations about the Western media presentation of terrorism and assumes or cherry picks facts to demonstrate political bias and a predetermined state conspiracy. Such a critical worldview again unconsciously mirrors the weakness of traditional terror studies during the Cold War, where writers like Claire Sterling in The Terror Network detected the hidden-hand of the Soviet Union behind every significant violent sub-state actor of the time. As we stated in our review, conventional and critical approaches often seem two sides of the same debased coin. More generally, the soi disant critical orientation of Critical Studies on Terrorism embraces the uncritical assumption that Western democracies have engaged in a conspiracy to demonize resistance by third world and particularly Muslim non-state actors. The critical approach thus places the assumption of the questionable and malign motivation of democratic governments (that nevertheless, and somewhat ironically, support the critical research agenda through the grant giving machinery) above conceptual precision and hypothesis testing. In the process, critical thinking problematically imports the paranoid outer reaches of the blogosphere into academia, thus legitimizing the conspiracies of hidden-hands, sinister schemes, malign forces, secret agendas, and controlling systems of power purveyed on websites like Spinwatch and Neocon Europe. In this context, Dixit and Stump's proposal to advance critical inquiry by “de-naturalizing the state” is less than helpful, not least because it merely reinforces the obsessive suspicion of the state that defines critical terrorology's worldview. In particular, Dixit and Stump's suggestion is based on the reductionist claim by Weldes, Laffey, Gusterson and Duvall that the whole field of “security studies” (an ill-defined subject area at the best of times) is predicated on immutable state threats. Consequently: Actors and their insecurities are naturalized in the sense that they are treated as facts that, because they are given by the nature of the interstate system, can be taken for granted. Taken as natural facts, states and other organized actors become the foundational objects the taken-for-granted of which serves to ground security studies.3 The proposed “de-naturalizing” of the state rests on this flimsy criticism of security studies, which raises more questions than it answers. What, we might ask, does “de-naturalizing” the state really mean? Taken to its logical conclusion it implies that we cannot discuss states as social facts. Nor can a de-naturalized perspective accept that the international system is primarily composed of states that express themselves through collective identities and interests and give material form to these through institutions and symbols that range from flags and anthems to national airlines and armed forces. From the constructivist ontology that Dixit and Stump embrace it appears that because there are no social facts that are not socially constituted there can be no such thing as facts at all. But if states cannot at a minimum be construed as social facts with histories and interests then how, we might wonder, can we begin to study their actions? In their subsequent discussion of terrorism as practice, the world Dixit and Stump inhabit is comprised purely of discourses and practices. Even a state's terror strategy, from this perspective, erroneously assumes an “objectively existing phenomenon.”4 Extending the process of de-naturalization, moreover, leads to some bizarre and nihilistic conclusions. The logic of constructivism would entail “de-naturalizing” not just the state, but all social arrangements, and any human organization, from nationalities, governments, and sub-state actors, to universities, academic journals, language and the constitution of the self itself. Ultimately, such “de-naturalization” undermines the foundations of social inquiry. All human institutions, from the state downwards, rest on assumptions and practices that are socially and historically constituted. All institutions and social structures can therefore be deconstructed.5 Fundamentally, there is nothing particularly novel about this insight that in fact began with the ancient Greek distinction between nomos and physis.6 Yet, if a program of inquiry simply regards constitutive processes as the only thing worth studying, then all phenomena collapse back into language, which robs everything, including constructivism itself, of meaning. As the Australian philosopher John Anderson observed of this style of thinking, it functions “as a substitute at once for philosophy and for a real theory of language.”7 The point is, as we argued in our review, that to achieve a genuine understanding we must either investigate the facts that are talked about or study the fact that they are talked about in a certain way. If we concentrate on the uses of language we are in danger of taking our discoveries about manners of speaking as answers to questions about what is there. This path leads not to any meaningful insight, but to the paradoxes of idealism Jorge Luis Borges explored in his Ficciones. In Borges's short story “Tln, Uqbar, Orbis Tertius,” the metaphysicians of the imaginary world of Tln (or the world conceived by constructivism) do not seek “for the truth, or even for verisimilitude,”8 which they consider devoid of interest, but instead pursue a “kind of amazement.”9 For, ultimately, if human agents are themselves, as Dale Copeland notes, merely “puppets of the ideational system in which they find themselves” then “each would exist as a socially conditioned 'Me', without the free-willed 'I' capable of resisting the socialization process.”10 Such a condition of linguistic mutability, in fact, undermines any transformative possibility for the international system, or indeed anything else. Yet, ironically, this is the very thing constructivists and critical theorists want to show is possible. Furthermore, if Dixit and Stump do not accept the logic of their constructivism, which abandons academic engagement for the path of Tlnist astonishment, then they must assert, somewhat arbitrarily, that we should de-naturalize the state, yet leave all other social institutions in their “natural” state. Such a method only frames the debate in a way that favors a set of ideological preferences, which inevitably prejudices the outcome of any inquiry by determining that all problems are the fault of the state and its insidious systems of exclusion. Dixit and Stump's proposed de-naturalization of the state, therefore, fails any adequate standard of hypothesis testing. Put simply, you cannot “de-naturalize” the one thing you might object to in the current political system, but leave all other practices and social arrangements, including the constitutive positions you occupy, naturalized as if you existed in Olympian detachment. As we pointed out in our review, at best this position is intellectually incoherent, and at worst hypocritical. We exemplified this point in our initial review with reference to Ken Booth's contradictory assertion that critical theorists must recognize that they inhabit a world constituted by powerful ideological systems, yet must themselves “stand outside” those systems.11 Such schemes repeat the Marxian fallacy of false consciousness, asserting that everyone, apart from the critically initiated, has their understanding distorted by the ideology in dominance. Critical theory apparently endows its disciples with the unique capacity to “stand outside” these systems of dominance and see through the othering processes of the state. Meanwhile, those trapped in the quotidian reality of the state have no access to this higher insight. Booth's article in Critical Studies on Terrorism shows where this style of thinking leads: to the conviction that the followers of critical theory alone can transcend the mundane and the political.

#### Any suggestion that we should focus on the domestic instead of the international is conservative and white supremacist populism—causes extreme relativism and justifies burying our heads in the sand

Michelson, 20

(Nicholas Michelsen, 10-6-20—Department of War Studies, School of Security, King’s College London “What is a minor international theory? On the limits of ‘Critical International Relations’,” Journal of International Political Theory, OnlineFirst, October 6, 2020, dml)

The problem of synthesis stalks all self-defining Critical approaches to IR. Defining the terms of reference for intellectual dissidence in relation to IR’s ‘disciplinary crisis’, as the poststructuralists did in viewing critique as a function of disciplinary marginality, created conditions ripe for viewing any competitor theory as problematic to the degree that they can be deemed insufficiently minor (Whitehall, 2016). The idea that critique necessitates moving ‘beyond IR’ as an inherently majoritarian project has become a widely expressed trope. The result is that Critical IR theorists now engage in increasingly virulent disagreements over the political and ethical implications of disciplinarity itself. In perpetual abeyance, claimants to Critical IR become hostages to a continuous risk of being exposed as insufficiently pure of the (modernist, racist, colonial, patriarchal, heteronormative, positivist, capitalist) traces of ‘the major literature/discipline’. At the same time, Critical IR scholars who advocate for a disciplinary exit in search of ‘more Critical’ inter-disciplines have found themselves wrestling with the charge of pre-judgement: Since they appear to know what ‘Being Critical’ will look like after de-disciplinarisation, critique takes the form of testing whether other scholars meet these pre-given criteria (Holden, 2006; Howell and Richter-Montpetit, 2020).

This stream in contemporary IR scholarship ignores the manners in which minor theories, far from tending towards alliances, are often set to contradictory political and ethical purposes. And that the visions of world politics created by scholars ‘moving beyond’ disciplinary IR can be just as problematic as visions already settled within the discipline. Contemporary political and social movements borrow intellectual resources from various (once or still) minor theoretical traditions in IR to think against a ‘Globalist’ world order, incorporating the Gramscian position that ‘politics is downstream from culture’, the ideal of a transgressive emancipatory identity, and the critique of neo-colonialism (Love, 2017; Nagle 2017). The philosopher Alain De Benoist wrote his manifesto for the New Right in the year 2000 with the aim of challenging the oppressive implications of major international theories, especially Liberalism, borrowing widely from resources of minor intellectual critique (de Benoist and Champetier, 1999). This theory is marginal in disciplinary IR, but influential amongst populist politicians like Putin, Trump, Orban, Salvini and Le Pen, as well as online communities of Race Realists, western chauvinists, and white nationalists. It proposes that Liberalism destroys the autonomy of ethnicities and cultures, and that the history of the west has been one of ongoing cultural as well as political colonialism. De Benoist’s argument is that the project of decolonisation is incomplete, and continues through international aid and UN-led Liberal paternalism.

The answer proposed by the New Right is to restore a truly independent status to diverse cultures and indigenous world-views in International Relations, and suggest that people belonging to these ‘birth-cultures’ must actively work towards their national and cognitive emancipation from all the baggage of Liberal modernity, if necessary, through violently closing borders. The New Right claims its intellectual marginality vis-à-vis Liberalism or Globalism (understood as the ideological representative of modernism in international thought) is a marker of its virtue. The New Right is not, however, widely viewed as a ‘Critical ally’ of Decolonial IR theory.

A claim to minor theoretical status is also visible amongst reactionary theorists of gender, including online groups of men’s rights activists, western chauvinist militias like the Proud Boys, or traditionalist ‘family values’ movements (Nagle, 2017). These groups develop an operative concept of the radical intellectual margins as central to their understandings of critique, and of the emancipatory relationship which their critique has to hegemonic theoretical frameworks that they perceive as oppressing them: Liberalism or ‘Cultural Marxism’ (Nagle, 2017). These actors see their critiques of what they term ‘gender ideology’ as part of a necessary escape from the straightjacket of modernist categories, currently hegemonic in contemporary academia. In other words, the belief that transgressive or marginal theory is emancipatory has diverse advocates, whose antimodernism or anti-hegemonism comes with divergent attitudes to gender, race, culture, economics, social, political and international organisation.

The sociological implications of this point were anticipated, but not fully developed, by Katz (1996: 488), who noted that:

‘talk of exclusion can lead to an unsavory hierarchy of marginalization – a kind of competitive victimology – and even to the cul-de-sac of an essentialist identity politics. Notions of exclusion are all about, one might even say tautologically about, position, and if we are not careful they can lead to relativist accounts that offer little of practical value. And they can be disingenuous – proclamations of exclusion by scholars who are quite included’.

The historical moment facing critique calls us to recognise that minor theories infer no allied ethics or politics. There is no cohesive and abiding sovereign ‘logic of modernity’ that forms the superstructure of disciplinary IR, and gives assurance that the postdisciplinary avant-guard will share an understanding of virtue. The romanticism characteristic of self-describing Critical intellectual cultures that arose in IR in the immediate Post-Cold War context must now be reconsidered. Many of the same intellectual tools are now being effectively mobilised by reactionaries, racists and gender absolutists. Contemporary reactionaries have read their Deleuze, their Gramsci, their Derrida and Foucault (see Land, 2012), and they are cognisant of the discursive logic and rhetorical power of, for example, concepts of exclusion, identity, precarity, marginality, hegemony, the avant-guard, victimhood and indigeneity (see Michelsen and De Orellana, 2019).

The challenge facing scholars in IR who seek to write in the service of vulnerable groups, like migrants lacking a safe home state, those who do not fit with heteronormative gender roles, or the victims of racism, is that their reactionary theoretical interlocutors have recognised the power in claiming to be uniquely reflexive critics, intellectually marginal vis-à-vis dominant theoretical assumptions about IR. The category ‘Critical IR’ provides no tools by which to counter these relativistic arguments. In this context, the belief that ‘Being Critical’ requires a minoritarian exit from disciplinary IR may be a distraction from developing methodologically and epistemologically rigorous critiques, that can be communicated as such. Faith in the emancipatory intellectual margins brings to mind Latour’s (2004: 225) worry that self-describing ‘Critical’ scholars today are like ‘those mechanical toys that endlessly make the same gesture when everything else has changed around them’.

# 2AC

## K

#### Exclusive focus on representations erodes meaningful reversal of the structures of exploitation – discursive focus must supplement, not replace, material discussion of reform

Giroux 06, Chair Professorship of Edcuation and Cultural Studies at Penn State,[Henry, “Dirty Democracy and State of Terrorism,” Comparative Studies of South Asia, 163-177]

Abstracted from the ideal of public commitment, the new authoritarianism represents a political and economic practice and form of militarism that loosen the connections among substantive democracy, critical agency, and critical education. In opposition to the rising tide of authoritarianism, educators across the globe must make a case for linking learning to progressive social change while struggling to pluralize and critically engage the diverse sites where public pedagogy takes place. In part, this suggests forming alliances that can make sure every sphere of social life is recognized as an important site of the political, social, and cultural struggle that is so crucial to any attempt to forge the knowledge, identifications, effective investments, and social relations that constitute political subjects and social agents capable of energizing and spreading the basis for a substantive global democracy. Such circumstances **require** that pedagogy be embraced as a moral **and** political practice, one that is directive and not dogmatic, an outgrowth of struggles designed to resist the increasing depoliticization of political culture that is the hallmark of the current Bush revolution. Education is the terrain where consciousness is shaped, needs are constructed, and the capacity for individual self-reflection and **broad social change** is nurtured and produced. Education has assumed an unparalleled significance in shaping the language, values, and ideologies that legitimize the structures and organizations that support the imperatives of global capitalism. Efforts to reduce it to a technique or methodology set aside, education remains a crucial site for the production and struggle over those pedagogical and political conditions that provide the possibilities for people to develop forms of agency that enable them individually and collectively to intervene in the processes through which the material relations of power shape the meaning and practices of their everyday lives. Within the current historical context, struggles over power take on a symbolic and discursive as well as a material and institutional form. The struggle over education is about more than the struggle over meaning and identity; it is also about how meaning, knowledge, and values are produced, authorized, and made operational within economic and structural relations of power. Education is not at odds with politics; it is an important and crucial element in any definition of the political and offers not only the theoretical tools for a systematic critique of authoritarianism but also a language of possibility for creating actual movements for democratic social change and a new biopolitics that affirms life rather than death, shared responsibility rather than shared fears, and engaged citizenship rather than the stripped-down values of consumerism. At stake here is combining symbolic forms and processes conducive to democratization with broader social contexts and the **institutional formations** of power itself. The **key point** here is to understand and engage educational and pedagogical practices from the point of view of how they are bound up with larger relations of power. Educators, students, and parents need to be clearer about how power works through and in texts, representations, and discourses, **while at the same time** recognizing that power **cannot be limited** to the study of representations and discourses, even at the level of public policy. Changing consciousness is **not the same** as **altering the institutional basis of oppression**; at the same time, institutional reform c**annot take place** without a change in consciousness capable of recognizing not only injustice but also the **very possibility for reform**, the capacity to reinvent the conditions [End Page 176] and **practices** that make a **more just future possible**. In addition, it is crucial to raise questions about the relationship between pedagogy and civic culture, on the one hand, and what it takes for individuals and social groups to believe that they have any responsibility whatsoever even to address the realities of class, race, gender, and other specific forms of domination, on the other hand. For too long, the progressives have ignored that the strategic dimension of politics is inextricably connected to questions of critical education and pedagogy, to what it means to acknowledge that education is always tangled up with power, ideologies, values, and the acquisition of both particular forms of agency and specific visions of the future. The primacy of critical pedagogy to politics, social change, and the radical imagination in such dark times is dramatically captured by the internationally renowned sociologist Zygmunt Bauman. He writes, Adverse odds may be overwhelming, and yet a democratic (or, as Cornelius Castoriadis would say, an autonomous) society knows of no substitute for education and self-education as a means to influence the turn of events that can be squared with its own nature, while that nature cannot be preserved for long without "critical pedagogy"—an education sharpening its critical edge, "making society feel guilty" and "stirring things up" through stirring human consciences. The fates of freedom, of democracy that makes it possible while being made possible by it, and of education that breeds dissatisfaction with the level of both freedom and democracy achieved thus far, are inextricably connected and not to be detached from one another. One may view that intimate connection as another specimen of a vicious circle—but it is within that circle that human hopes and the chances of humanity are inscribed, and can be nowhere else.59

#### Crisis representations are good even though there’s no ideal relationship to the suffering of others --- encourages an awareness that our relative position in the world is a matter of luck, and any alternative means we can’t talk about, plan for, or anticipate catastrophes

**Recuber 13** [Timothy, sociologist who teaches in the Writing Program at Princeton University, he studies the representation of death and disaster in mass media and consumer culture, “Disaster Porn!,” *Contexts,* Vol 12, Issue 2, May 1, 2013]

The Ethics of Watching

As early as 1993, in his book Distant Suffering, sociologist Luc Boltanski argued that an emerging, Western “crisis of pity” signaled not only a loss of confidence in the veracity of reportage on global humanitarian issues, but “also relieve[d] the anxiety, loss of self-esteem and sense of indignity which is often said to be provoked by seeing wounded, imprisoned, tortured, starving or even dead people, without being able to do anything.”

Prevailing notions of disaster porn today, in which any and every form of disaster-related media is potentially pornographic, exacerbate this tendency. If documentaries, news reports, filmed dramatizations of real events, and completely fictional Hollywood blockbusters can all be written off as disaster porn, we run the risk of ignoring the suffering of others and relieving our own anxieties about viewing their misfortunes. Those who decry disaster porn no doubt do so to preserve “the grieving of their privacy and the dead of their dignity,” as Susan Llewelyn Leach wrote in 2005. But the ideal of truly ethical or authentic spectatorship of disaster may be impossible, given the inherent inequity of watching the misery of others from a position of relative comfort.

The dangers of disaster porn—namely, the lack of compassion it is said to engender—have also been overstated. After all, alongside the increasing visibility of both disaster media and its critics, Americans appear to have donated more money to victims of disasters than ever before. According to the website Charity Navigator, Americans gave $1.6 billion to relief efforts for the 2004 South Asian tsunami, contributed $3.3 billion to Hurricane Katrina relief in 2005, and then in 2010, in the midst of a significant recession, gave $1.4 billion to victims of the Haiti earthquake. If donations to the Red Cross are a good metric, then Americans gave much more money for disaster relief in South Asia and Haiti than they had for any previous foreign disasters, especially those—like the 1984-85 Ethiopian famine and the 1985 Mexico City earthquake—that pre-date the term disaster porn itself. Whatever its deleterious effects, the supposed proliferation of disaster pornography over the last decade does not seem to have decreased Americans’ sympathy for disaster victims, at least as measured by their charitable donations.

If mass media is to be a force for good, then journalists, cultural critics, and especially social scientists should avoid broad-stroke condemnations of the disaster porn genre. Such condemnations encourage audiences to remain in the relative safety of ironic detachment—comfortably critical of media processes and effects, rather than struggling with the nature of their own discomfort over injustice and its potential claims on our emotions.

The Uses of Exposure

To cast something off as disaster porn is, borrowing the language of sociologist C. Wright Mills, to reframe a “public issue” as merely a “private trouble.” It substitutes aesthetic questions about one’s personal viewing preferences for ethical considerations about one’s actual ability to help. In the current media landscape, saturated with so-called disaster porn, this has not yet become the norm—as evidenced by high levels of charitable giving for even very distant disasters. But if graphic scenes of others’ suffering become subject to a widely held taboo, then viewers may feel absolved of the obligation to think and act on such suffering—or even to pay attention in the first place.

The desire to turn away from death and disaster is understandable in a media-saturated world where there is an endless surfeit of tragedies to display. But as sociologist Iain Wilkinson has recently argued, such moral engagement with the suffering of others, “in all its real-life perplexities, compromises, and difficulties is…an indispensable component of the quest for social understanding.”

Disaster porn, then, in all its iterations and for all its flaws, is a vital political terrain in which publics are at least implicitly asked to struggle with the social significance of the suffering of others. It connects public issues like war, famine, earthquakes, and terrorist

attacks to the private lives of those they affect, and shows us how disruptions of social structure become disruptions in individual biographies. This is the case in even the most seemingly stereotypical news reports of suffering in the developing world, and in even the most outlandish Hollywood disaster epics as well.

True, the focus on individual acts of heroism in films like 2012 often shifts attention away from the suffering multitudes, and for this they have been rightly criticized. But the seemingly impossible odds that the protagonists of such disaster epics must overcome also serve to highlight our shared vulnerability to risk. By imagining ourselves in Jackson Curtis’s shoes, we recognize that we might not be so lucky, and likely not survive at all. Similar sentiments are aroused when we watch the evening news, or a documentary about survivors of some terrible real-life tragedy. Such sentiment should be cultivated, not condemned.

In disaster porn, for all its flaws, publics are at least implicitly asked to struggle with the social significance of the suffering of others.

Encouraging an awareness of the vicissitudes of fate helps to combat the common tendency to blame victims of chance and inequality for their own misfortunes, and to view one’s own good fortune as the result of special individual talents unaffected by larger social forces or privileges. In this way, so-called disaster porn may prove itself to be more of a virtue than a vice.

#### Economic collapse causes global war.

Sundaram 19—(Sundaram - 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; Popov - 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, February, <http://www.ipsnews.net/2019/02/economic-crisis-can-trigger-world-war/>.

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. The implications beyond the economy of such developments and policy responses are already being seen. Prolonged economic distress has worsened public antipathy towards the culturally alien — not only abroad, but also within. Thus, another round of economic stress is deemed likely to foment unrest, conflict, even war as it is blamed on the foreign. International trade shrank by two-thirds within half a decade after the US passed the Smoot-Hawley Tariff Act in 1930, at the start of the Great Depression, ostensibly to protect American workers and farmers from foreign competition! Liberalization’s discontents Rising economic insecurity, inequalities and deprivation are expected to strengthen ethno-populist and jingoistic nationalist sentiments, and increase social tensions and turmoil, especially among the growing precariat and others who feel vulnerable or threatened. Thus, ethno-populist inspired chauvinistic nationalism may exacerbate tensions, leading to conflicts and tensions among countries, as in the 1930s. Opportunistic leaders have been blaming such misfortunes on outsiders and may seek to reverse policies associated with the perceived causes, such as ‘globalist’ economic liberalization. Policies which successfully check such problems may reduce social tensions, as well as the likelihood of social turmoil and conflict, including among countries. However, these may also inadvertently exacerbate problems. The recent spread of anti-globalization sentiment appears correlated to slow, if not negative per capita income growth and increased economic inequality. To be sure, globalization and liberalization are statistically associated with growing economic inequality and rising ethno-populism. Declining real incomes and growing economic insecurity have apparently strengthened ethno-populism and nationalistic chauvinism, threatening economic liberalization itself, both within and among countries. Insecurity, populism, conflict Thomas Piketty has argued that a sudden increase in income inequality is often followed by a great crisis. Although causality is difficult to prove, with wealth and income inequality now at historical highs, this should give cause for concern. Of course, other factors also contribute to or exacerbate civil and international tensions, with some due to policies intended for other purposes. Nevertheless, even if unintended, such developments could inadvertently catalyse future crises and conflicts. Publics often have good reason to be restless, if not angry, but the emotional appeals of ethno-populism and jingoistic nationalism are leading to chauvinistic policy measures which only make things worse. At the international level, despite the world’s unprecedented and still growing interconnectedness, multilateralism is increasingly being eschewed as the US increasingly resorts to unilateral, sovereigntist policies without bothering to even build coalitions with its usual allies. Avoiding Thucydides’ iceberg Thus, protracted economic distress, economic conflicts or another financial crisis could lead to military confrontation by the protagonists, even if unintended. Less than a decade after the Great Depression started, the Second World War had begun as the Axis powers challenged the earlier entrenched colonial powers. They patently ignored Thucydides’ warning, in chronicling the Peloponnesian wars over two millennia before, when the rise of Athens threatened the established dominance of Sparta! Anticipating and addressing such possibilities may well serve to help avoid otherwise imminent disasters by undertaking pre-emptive collective action, as difficult as that may be. The international community has no excuse for being like the owners and captain of the Titanic, conceitedly convinced that no iceberg could possibly sink the great ship.

#### Decoupling makes growth sustainable—empirics, efficiency, substitution, consumption decline, innovation, financial oversight, and new reserves.

McAfee 19—(principal research scientist and codirector of the Initiative on the Digital Economy at MIT, PHD in business administration from Harvard, MS in mechanical engineering from MIT, unrelated to the crazy McAfee). McAfee, Andrew. 2019. More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources—and What Happens Next. Scribner.

What’s behind the broad and deep dematerialization of the American economy? Why are we now post-peak in our consumption of so many resources? In the next chapters I’ll present my explanation of the causes of dematerialization. First, though, I want to give a short explanation of what the causes are not. In particular, I want to show that the CRIB strategies born around Earth Day and promoted since then for reducing our planetary footprint—consume less, recycle, impose limits, and go back to the land—have not been important contributors to the dematerialization we’ve seen. Since Earth Day, we have demonstrably not consumed much less or gone back to the land in large numbers. We have recycled a lot, but this fact is irrelevant because recycling is a separate phenomenon from dematerialization. Much more relevant than recycling are the limits we’ve imposed in a couple of areas. The history of these limits is instructive because it helps us separate great ideas (limits on pollution and hunting animals) from truly terrible ones (limits on family size). All, Consuming The C part of the CRIB strategy—a plea for us to consume less for the planet’s sake—has largely fallen on deaf ears. To see this, let’s look at change in the real GDP of the United States. It grew by an average of 3.2 percent per year between the end of World War II and Earth Day. From 1971 to 2017, it grew by an annual average of 2.8 percent. Population growth also slowed down after the postwar baby boom, but it remained positive. America’s population increased by an average of 1.5 percent a year from 1946 to 1970, and by 1 percent annually from 1971 to 2016. So while we have slowed down some, we certainly haven’t come close to embracing degrowth in our population or consumption. But the American economy has changed significantly since Earth Day and has become relatively less oriented around making and building things. Services, ranging from haircuts to insurance policies to concerts, now make up a much larger share of the economy than they did in 1970. US personal consumption of services has risen from 30 percent of GDP in 1970 to 47 percent in 2017. So, has the decline in resource use come about because we don’t make or consume as many products as we used to? No. While it’s true that products have been declining in relative terms (in other words, as a percentage of total GDP) compared to services, our total consumption of products has still been increasing in absolute terms. So has our industrial production—the total amount of things made in America. What’s more, the United States has not recently shifted away from “heavy” manufacturing. We still make lots of vehicles, machinery, and other big-ticket items, just as we used to. But we don’t make them the same way we used to. We now make them using fewer resources. To see this, let’s add a line showing US industrial production to our graph from the previous chapter of GDP and total metal consumption. This updated chart makes clear that the country hasn’t stopped producing things. Instead, America’s manufacturers have learned to produce more things from less metal. So to summarize, growth of consumption has in some cases slowed down in recent years. But growth in resource use has done much more than slow down—it has reversed course and is now generally negative. We have not as a society embraced degrowth. Instead, we’ve done something far stranger and more profound: we’ve decoupled growth—in consumption, prosperity, and our economy—from resource use. Early in the Industrial Era, the French diplomat Alexis de Tocqueville published his 1835 book, Democracy in America. One of the first major investigations into the character of the then-young country, it remains one of the best.I De Tocqueville observed almost two centuries ago that the people of the United States liked their things: “In America, the passion for material well-being… is general.… Minds are universally preoccupied with meeting the body’s every need and attending to life’s little comforts.” What’s new is that providing for our needs and comforts now requires fewer materials, not more. Recycling: Big, and Beside the Point Recycling is big business: 47 percent, 33 percent, 68 percent, and 49 percent of all the tonnage of aluminum, copper, lead, and iron and steel (respectively) consumed in the United States in 2015 came from scrap metal rather than ore taken from the earth. Similarly, almost 65 percent of paper products came from recycled newspapers, pizza boxes, and so on rather than from felled trees. Yet recycling is irrelevant for dematerialization. Why? Because recycling is about where resource-producing factories get their inputs, while dematerialization is about what’s happened to total demand for their outputs. Paper mills, for example, get their raw material from two main sources: recycling centers and forests. American consumption of output from all paper mills combined has been declining since 1990, the year of peak paper in the United States. This decline is purely a matter of how much total demand there is for paper; it has no direct relationship to the amount of recycling taking place. But is there any indirect relationship? How much would our total consumption of resources such as paper or steel change without recycling? It’s impossible to answer with certainty, but my intuition is that if recycling didn’t exist, our total consumption of resources such as aluminum, copper, iron, and steel would be declining even more quickly. This seems counterintuitive; the conclusion is supported by a simple chain of reasoning. Recycling metals makes economic sense exactly because it’s cheaper to melt down and reuse scrap than it is to dig out and process ore. Without this scrap, a ton of metal would probably cost more, all other things being equal. And as a general rule, we use less of a thing when it costs more. So it seems most likely to me that we’d use less metal overall in a hypothetical zero-recycling economy than we do in our actual enthusiastic-about-scrap-metal-recycling economy. This does not mean that I think metal recycling is bad. I think it’s great, since it gives us cheaper metal products and reduces total greenhouse gas emissions (since it takes much less energy to obtain metal from scrap than from ore). But recycling, whatever its merits, is not part of the dematerialization story. It’s a different story. Back to the Land Is Bad for the Land The back-to-the-land movement is a fascinating chapter in the history of American environmentalism, but a largely insignificant one. There were simply never enough homesteaders and others who turned away from modern, technologically sophisticated life to make much of a difference. Which is a good thing for the environment. As Jeffrey Jacob documents in his book New Pioneers, the back-to-the-land movement in the United States began in the mid-1960s and continued into the next decade. According to one estimate, as many as 1 million North American back-to-the-landers were living on small farms by the end of the 1970s. This, though, was a weak current against the strong tide of urban growth; the number of American city dwellers increased by more than 17 million between 1970 and 1980. Going back to the land might have been widely discussed, but it was comparatively rarely practiced. We should be thankful for this because homesteading is not great for the environment, for two reasons. First, small-scale farming is less efficient in its use of resources than massive, industrialized, mechanized agriculture. To get the same harvest, homesteaders use more land, water, and fertilizer than do “factory farmers.” Farms of less than one hundred acres, for example, grow 15 percent less corn per acre than farms with more than a thousand acres. And bigger farms get better faster. Between 1982 and 2012 farms under one hundred acres grew their total factor productivity by 15 percent, whereas farms over a thousand acres grew theirs by 51 percent. So more homesteaders would have meant more land under cultivation, more water and fertilizer used, and so on. Second, rural life is less environmentally friendly than urban or suburban dwelling. City folk live in high-density, energy-efficient apartments and condos, travel only short distances for work and errands, and frequently use public transportation. None of these things is true of country living. As economist Edward Glaeser summarizes, “If you want to be good to the environment, stay away from it. Move to high-rise apartments surrounded by plenty of concrete.… Living in the country is not the right way to care for the Earth. The best thing that we can do for the planet is build more skyscrapers.” And if homesteaders decide not only to ignore Glaeser’s advice but also to leave modernity further behind and heat their homes with coal or wood, they do still more environmental harm. Coal home furnaces create lots of atmospheric pollution, much more than comes from other kinds of fuel. Poland, for example, today has 80 percent of all homes in Europe that burn coal, and thirty-three of the Continent’s fifty most polluted cities. And burning wood means chopping down trees. A lot of them. It’s almost certainly the case that the English turned to coal for home heating in the middle of the sixteenth century because they’d cut down such a huge percentage of their trees that the price of wood skyrocketed. So if we care about the environment, we should probably be glad that the back-to-the-land movement stalled out, and that industrial-scale, high-yield agriculture has become the norm. A comprehensive review published in Nature Sustainability in 2018 concluded, “The data… do not suggest that environmental costs are generally larger for [high-yield] farming systems.… If anything, positive associations—in which high-yield, land-efficient systems also have lower costs in other dimensions—appear more common.” Imposing Limits: The Worst Idea, and the Best One Of the four elements of the CRIB strategy, the drive to impose limits has by far the most checkered history. It yielded both the most harmful strategies, and the most helpful ones. The Population Implosion In 1979 the government of the People’s Republic of China announced its new family planning policy, which soon became known as the one-child policy. It was enacted despite the steady decline in the country’s birth rate throughout the 1970s. But after reading Limits to Growth, A Blueprint for Survival, and other books limning the looming dangers of unchecked population expansion, the missile scientist Song Jian came to believe that even faster birth rate reductions were required. He became the architect of the new policy, the main effect of which was to limit ethnic Han Chinese families to a single child. Exceptions to this restriction included giving some couples the right to a second child if their first was a girl, but the one-child policy soon became a central fact of Chinese family life. It is hard to see it in a positive light. After the policy was officially abandoned in late 2015, journalist Barbara Demick wrote its unflattering obituary: “Family planning became a powerful bureaucracy, with officials who terrorized parents. They beat and burned down the houses of people who violated the family-planning limits. They snatched over-quota baby girls from the arms of their mothers and gave them to orphanages, which in turn put them up for adoption, earning a three-thousand-dollar ‘donation’ for each baby.” The Chinese government maintains that approximately 400 million births were prevented by the one-child policy, but this is probably a large overestimate. As the economist Amartya Sen points out, “The additional contribution of coercion to reducing fertility in China is by no means clear, since compulsion was superimposed on a society that was already reducing its birth rate.” In their 2013 essay “How Will History Judge China’s One-Child Policy?” the demographers Wang Feng, Yong Cai, and Baochang Gu compared the policy unfavorably to two of their country’s great twentieth-century convulsions: the Cultural Revolution and the Great Leap Forward. They wrote, “While those grave mistakes both cost tens of millions of lives, the harms done were relatively short-lived and were corrected quickly afterward. The one-child policy, in contrast, will surpass them in impact by its role in creating a society with a seriously undermined family and kin structure, and a whole generation of future elderly and their children whose well-being will be seriously jeopardized.” History, in short, will judge this government-imposed limit on family size harshly.II Rational Restrictions Imposing limits on family size is a terrible idea for reasons both practical and moral. But it’s an excellent idea to impose limits on pollution, and on hunting some animals and selling products that come from their bodies. Such restrictions have yielded the great triumphs of the conservation and environmental movements in America and other countries. In 1970, the same year as the original Earth Day festival, the United States established the federal Environmental Protection Agency and made major amendments to 1963’s Clean Air Act. This was the start of a cascade of laws and regulations aimed at reducing pollution and other environmental harms. These have worked amazingly well. For example, atmospheric levels of sulfur dioxide in the United States have dropped to levels not seen since the first years of the twentieth century, and other kinds of air pollution have also dropped sharply. From 1980 to 2015, total emissions of six principal air pollutants decreased by 65 percent. As lead was banned from paint and gasoline, the concentration of that element in the blood of young children dropped by more than 80 percent between 1976 and 1999. Because lead retards brain development during youth, these declines are tremendously important. According to one study, American children in 1999 had IQs that were on average 2.2 to 4.7 points higher than they would have been had lead concentrations remained at their 1970 levels. More work certainly remains, but thanks to the limits imposed on pollutants, America’s soil, air, and water are all much cleaner than they were on Earth Day. The conservationists who grew concerned in the early years of the twentieth century about what hunting was doing to the populations of many animals were the predecessors of Earth Day’s environmentalists. Conservationists were spurred to action by the shocking extinction of the passenger pigeon. That such an abundant bird could be eradicated stunned many and spurred new laws restricting trade in animal products. The first of these was the Lacey Act, passed by Congress in 1900 and named for John Lacey, a Republican representative from Iowa. As he said during debate on the bill, “The wild pigeon, formerly in flocks of millions, has entirely disappeared from the face of the earth. We have given an awful exhibition of slaughter and destruction, which may serve as a warning to all mankind. Let us now give an example of wise conservation of what remains of the gifts of nature.” The Lacey Act and its successors imposed three kinds of limits on taking and consuming animals. First, hunting of some animals was fully banned. Protected species include the sea otter, which was protected by a 1911 international moratorium; the snowy egret, which was ruthlessly hunted for its gorgeous plumes until passage of the Weeks-McLean Law Act in 1913; and dolphins and manatees, which were sheltered by 1972’s Marine Mammal Protection Act. Second, many limits have been imposed on when and where animals can be hunted. Sport and food hunting are illegal in most national parks, for example, and duck, bear, deer, and many other animals have well-defined hunting seasons. Third, bans have been imposed on the commercial trade in many animal products. The most sweeping of these is probably the nationwide ban on the sale of hunted meat. You may see venison or bison meat at a butcher’s counter or on a menu in America, but it always comes from a ranch, not a hunt. These imposed limits have brought many iconic American animals back from the brink of extinction. North America now has more than half a million bison, for example, and over three thousand sea otters live off the coast of Northern California. Some previously threatened animals have come back so well that they’re now widely considered pests. People in many American neighborhoods today feel that there are too many white-tailed deer, Canada geese, and beaver. The story of dematerialization is not the story of following the CRIB strategies. Except for the excellent idea of imposing limits on polluting and pursuing animals, these strategies were ignored (we didn’t embrace degrowth and stop consuming), abandoned (we stopping going back to the land), irrelevant (dematerialization has nothing to do with recycling), or deeply misguided (China’s attempt to limit family size was a huge mistake). So how did we finally start getting more from less? How did we become post-peak in our use of so many resources? The next three chapters will take up this critical question. CHAPTER 7 What Causes Dematerialization? Markets and Marvels The triumph of the industrial arts will advance the cause of civilization more rapidly than its warmest advocates could have hoped. —Charles Babbage, The Exposition of 1851; or, Views of the Industry, the Science, and the Government of England, 1851 If CRIB strategies aren’t responsible for the large-scale dematerialization of the American economy that has taken place since Earth Day, then what is? How have we got more from less? I believe that four main forces are responsible, and that it’s helpful to think of them as two pairs. In this chapter we’ll look at the first pair, then take up the second in chapter 9. Capitalism and technological progress are the first pair of forces driving dematerialization. This statement will come as a surprise to many, and for good reason. After all, it’s exactly this combination that caused us to massively increase our resource consumption throughout the Industrial Era. As we saw in chapter 3, the ideas of William Jevons and Alfred Marshall point to the distressing conclusion that capitalism and tech progress always lead to more from more: more economic growth, but also more resource consumption. So what changed? How are capitalism and tech progress now getting us more from less? To get answers to these important questions, let’s start by looking at a few recent examples of dematerialization. Fertile Farms America has long been an agricultural juggernaut. In 1982, after more than a decade of steady expansion due in part to rising grain prices, total cropland in the country stood at approximately 380 million acres. Over the next ten years, however, almost all of this increase was reversed. So much acreage was abandoned by farmers and given back to nature that cropland in 1992 was almost back to where it had been almost twenty-five years before. This decline had several causes, including falling grain prices, a severe recession, over-indebted farmers, and increased international competition. A final factor, though, was the ability to get ever-more corn, wheat, soybeans, and other crops from the same acre of land, pound of fertilizer and pesticide, and gallon of water. The material productivity of agriculture in the United States has improved dramatically in recent decades, as we saw in chapter 5. Between 1982 and 2015 over 45 million acres—an amount of cropland equal in size to the state of Washington—was returned to nature. Over the same time potassium, phosphate, and nitrogen (the three main fertilizers) all saw declines in absolute use. Meanwhile, the total tonnage of crops produced in the country increased by more than 35 percent. As impressive as this is, it’s dwarfed by the productivity improvements of American dairy cows. In 1950 we got 117 billion pounds of milk from 22 million cows. In 2015 we got 209 billion pounds from just 9 million animals. The average milk cow’s productivity thus improved by over 330 percent during that time. Thin Cans Tin cans are actually made of steel coated with a thin layer of tin to improve corrosion resistance. They’ve been used since the nineteenth century to store food. Starting in the 1930s, they began also to be used to hold beer and soft drinks.I In 1959 Coors pioneered beer cans made of aluminum, which is much lighter and more corrosion resistant than steel. Royal Crown Cola followed suit for soda five years later. As Vaclav Smil relates, “A decade later steel cans were on the way out, and none of them have been used for beer since 1994 and for soft drinks since 1996.… At 85 g the first aluminum cans were surprisingly heavy; by 1972 the weight of a two-piece can dropped to just below 21 g, by 1988 it was less than 16 g, a decade later it averaged 13.6 g, and by 2011 it was reduced to 12.75 g.” Manufacturers accomplished these reductions by making aluminum cans’ walls thinner, and by making the sides and bottom from a single sheet of metal so that only one comparatively heavy seam was needed (to join the top to the rest of the can). Smil points out that if all beverage cans used in 2010 weighed what they did in 1980, they would have required an extra 580,000 tons of aluminum. And aluminum cans kept getting lighter. In 2012 Ball packaging introduced into the European market a 330 ml can that held 7.5 percent less than the US standard, yet at 9.5 g weighed 25 percent less. Gone Gizmos In 2014 Steve Cichon, a “writer, historian, and retired radio newsman in Buffalo, NY,” paid $3 for a large stack of front sections of the Buffalo News newspaper from the early months of 1991. On the back page of the Saturday, February 16, issue was an ad from the electronics retailer Radio Shack. Cichon noticed something striking about the ad: “There are 15 electronic gimzo type items on this page.… 13 of the 15 you now always have in your pocket.” The “gizmo type items” that had vanished into the iPhone Cichon kept in his pocket included a calculator, camcorder, clock radio, mobile telephone, and tape recorder. While the ad didn’t include a compass, camera, barometer, altimeter, accelerometer, or GPS device, these, too, have vanished into the iPhone and other smartphones, as have countless atlases and compact discs. The success of the iPhone was almost totally unanticipated. A November 2007 cover story in Forbes magazine touted that the Finnish mobile phone maker Nokia had over a billion customers around the world and asked, “Can anyone catch the cell phone king?” Yes. Apple sold more than a billion iPhones within a decade of its June 2007 launch and became the most valuable publicly traded company in history. Nokia, meanwhile, sold its mobile phone business to Microsoft in 2013 for $7.2 billion to get “more combined muscle to truly break through with consumers,” as the Finnish company’s CEO Stephen Elop said at the time of the deal. It didn’t work. Microsoft sold what remained of Nokia’s mobile phone business and brand to a subsidiary of the Taiwanese electronics manufacturer Foxconn for $350 million in May of 2016. Radio Shack filed for bankruptcy in 2015, and again in 2017. From Peak Oil to… Peak Oil In 2007 US coal consumption reached a new high of 1,128 million short tons, over 90 percent of which was burned to generate electricity. Total coal use had increased by more than 35 percent since 1990, and the US Energy Information Administration (the official energy statisticians of the US government) forecast further growth of up to 65 percent by 2030. Also in 2007 the US Government Accountability Office (GAO), a federal agency known as “the congressional watchdog,” published a report with an admirably explanatory title: “Crude Oil: Uncertainty about Future Oil Supply Makes It Important to Develop a Strategy for Addressing a Peak and Decline in Oil Production.” It took seriously the idea of “peak oil,” a phrase coined in 1956 by M. King Hubbert, a geologist working for Shell Oil. As originally conceived, peak oil referred to the maximum amount of oil that we could annually produce for all of humanity’s needs. The first oil wells pumped out the crude oil that was closest to the earth’s surface or otherwise easiest to access. As those wells dried up, we had to drill deeper ones, both on land and at sea. As the world’s economies kept growing, so did total demand for oil, which kept getting harder and harder to obtain. Peak oil captured the idea that despite our best efforts and ample incentive, we would come to a time after which we would only be able to extract less and less oil year after year from the earth. Most of the estimates summarized in the GAO report found that peak oil would occur no later than 2040. The report did not mention fracking, which in retrospect looks like a serious omission. Fracking is short for “hydraulic fracturing” and is a means of obtaining oil and natural gas from rock formations lying deep underground. It uses a high-pressure fluid to cause fractures in the rock, through which oil and gas can flow and be extracted. The United States and other countries have long been known to have huge reserves of hydrocarbons in deep rock formations, which are often called shales. Companies had been experimenting with fracking to get at them since the middle of the twentieth century, but had made little progress. In 2000 fracking accounted for just 2 percent of US oil production. That figure began to increase quickly right around the time of the GAO report. Not because of any single breakthrough, but instead because the suite of tools and techniques needed for profitable fracking had all improved enough. A gusher of shale oil and gas ensued. Thanks to fracking, US crude oil production almost doubled between 2007 and 2017, when it approached the benchmark of 10 million barrels per day. By September of 2018 America had surpassed Saudi Arabia to become the world’s largest producer of oil. American natural gas production, which had been essentially flat since the mid-1970s, jumped by nearly 43 percent between 2007 and 2017. As a result of the fracking boom the United States has experienced peak coal rather than peak oil. And the peak in coal is not in total annual supply, but instead in demand. Fracking made natural gas cheap enough that it became preferred over coal for much electricity generation. By 2017 total US coal consumption was down 36 percent from its 2007 high point. The phrase peak oil is still around, but, as is the case with coal, it usually no longer refers to supply. As a 2017 Bloomberg headline put it, “Remember Peak Oil? Demand May Top Out Before Supply Does.” Even though the extra supply from fracking has helped push down oil and gas prices, many observers now believe that energy from other sources—the sun, wind, and the nuclei of uranium atoms—is getting cheaper faster and becoming much more widely available. So much so that, as a 2018 article in Fortune about the future of oil hypothesized, “This wouldn’t be just another oil-price cycle, a familiar roller coaster in which every down is followed by an up. It would be the start of a decades-long decline of the Oil Age itself—an uncharted world in which… oil prices might be ‘lower forever.’ ” Analysts at Shell, the company from which the phrase peak oil originated, now estimate that global peak oil demand might come as soon as 2028. Taking Stock of Rolling Stock My friend Bo Cutter started his career in 1968 working for Northwest Industries, a conglomerate that owned the Chicago and North Western Railway. One of his first assignments was to help a team tasked with solving a problem that sounds odd to modern ears: figuring out where CNW’s railcars were. These cars are massive metal assemblies, each weighing thirty tons or more. In the late 1960s CNW owned thousands of them, representing a huge commitment of both material and money. Across the railroad industry, the rule of thumb then was that about 5 percent of a company’s railcars moved on any given day. This was not because the other 95 percent needed to rest. It was because their owners didn’t know where they were. CNW owned thousands of miles of track in places as far from Chicago as North Dakota and Wyoming. Its rolling stock (as locomotives and railcars are called) could also travel outside the company’s network on tracks owned by other railroads. So these assets could be almost anywhere in the country. When the railcars weren’t moving, they sat in freight yards. At the time Cutter started his job, freight yards didn’t keep up-to-date records of the idle rolling stock they contained because, in the days before widespread digital computers, sensors, and networks, there was no way to cost-effectively know or communicate the location of each car. So it was impossible for CNW or any other railroad to systematically track its most important inventory, even though doing so would be hugely beneficial to the company’s bottom line. For example, Cutter’s team knew that if they could increase the percentage of cars moving each day from 5 percent to 10 percent, they would need only half as many of them. Even a single percentage point increase in freight-car use would yield major financial benefits. When Cutter started his assignment, CNW and all other railroads employed spotters, who visited yards and watched trains pass, then telegraphed their findings to the head office. Other railroads passed on similar information to collect the demurrage charges they were owed for each CNW car on their tracks and in their yards. Cutter’s team improved on these methods by making them more systematic and efficient. They put in place a better baseline audit of where railcars were, employed more spotters, painted CNW cars differently so they were easier to see, and explored how to make more use of a new tool for businesses: the digital computer. That tool and its kin are now pervasive in the railroad industry. In the early 1990s, for example, companies started putting radio-frequency identification tags on each piece of rolling stock. These tags would be read by trackside sensors, thus automating the work of spotting. At present over 5 million messages about railcar status and location are generated and sent throughout the American railway system every day, and the country’s more than 450 railroads have nearly real-time visibility over all their rolling stock. The Rare Earth Scare In September of 2010 the Japanese government took into custody the captain of a Chinese fishing boat that had collided with Japanese patrol vessels near a group of uninhabited islands in the East China Sea claimed by both countries. China responded by imposing an embargo on shipments of rare earth elements (REE) to the Land of the Rising Sun. Even though Japan relented almost immediately and released the captain, a global panic began. This is because rare earths are “vitamins of chemistry,” as USGS scientist Daniel Cordier puts it. “They help everything perform better, and they have their own unique characteristics, particularly in terms of magnetism, temperature resistance, and resistance to corrosion.” By 2010 China produced well over 90 percent of the world’s REE. Its actions in the wake of the maritime incident convinced many that it could and would take unilateral action to control the flow of these important materials, and panicked buying soon followed (along with its close cousin rampant speculation). A bundle of REE that would have sold for less than $10,000 in early 2010 soared to more than $42,000 by April of 2011. In September of that year the US House of Representatives held a hearing called “China’s Monopoly on Rare Earths: Implications for US Foreign and Security Policy.” China didn’t attain its near monopoly because it possessed anything close to 90 percent of global reserves of REE. In fact, rare earths aren’t rare at all (one, cerium, is about as common in the earth’s crust as copper). However, they’re difficult to extract from ore. Obtaining them requires a great deal of acid and generates tons of salt and crushed rock as by-products. Most other countries didn’t want to bear the environmental burden of this heavy processing and so left the market to China. In the wake of the embargo, this seemed like a bad idea. As Representative Brad Sherman put it during the congressional hearing, “Chinese control over rare earth elements gives them one more argument as to why we should kowtow to China.” But there was never much kowtowing. By the time of the hearing, prices for REE were already in free fall. Why? What happened to the apparently tight Chinese stranglehold over REE? Several factors caused it to ease, including the availability of other supply sources and incomplete maintenance of the embargo. But as public affairs professor Eugene Gholz noted in a 2014 report on the “crisis,” many users of REE simply innovated their way out of the problem. “Companies such as Hitachi Metals [and its subsidiary in North Carolina] that make rare earth magnets found ways to make equivalent magnets using smaller amounts of rare earths in the alloys.… Meanwhile, some users remembered that they did not need the high performance of specialized rare earth magnets; they were merely using them because, at least until the 2010 episode, they were relatively inexpensive and convenient.” Overall, the companies using REE found many inexpensive and convenient alternatives. By the end of 2017 the same bundle of rare earths that had been trading above $42,000 in 2011 was available for about $1,000.What’s Going On? There is no shortage of examples of dematerialization. I chose the ones in this chapter because they illustrate a set of fundamental principles at the intersection of business, economics, innovation, and our impact on our planet. They are: We do want more all the time, but not more resources. Alfred Marshall was right, but William Jevons was wrong. Our wants and desires keep growing, evidently without end, and therefore so do our economies. But our use of the earth’s resources does not. We do want more beverage options, but we don’t want to keep using more aluminum in drink cans. We want to communicate and compute and listen to music, but we don’t want an arsenal of gadgets; we’re happy with a single smartphone. As our population increases, we want more food, but we don’t have any desire to consume more fertilizer or use more land for crops. Jevons was correct at the time he wrote that total British demand for coal was increasing even though steam engines were becoming much more efficient. He was right, in other words, that the price elasticity of demand for coal-supplied power was greater than one in the 1860s. But he was wrong to conclude that this would be permanent. Elasticities of demand can change over time for several reasons, the most fundamental of which is technological change. Coal provides a clear example of this. When fracking made natural gas much cheaper, total demand for coal in the United States went down even though its price decreased. With the help of innovation and new technologies, economic growth in America and other rich countries—growth in all of the wants and needs that we spend money on—has become decoupled from resource consumption. This is a recent development and a profound one. Materials cost money that companies locked in competition would rather not spend. The root of Jevons’s mistake is simple and boring: resources cost money. He realized this, of course. What he didn’t sufficiently realize was how strong the incentive is for a company in a contested market to reduce its spending on resources (or anything else) and so eke out a bit more profit. After all, a penny saved is a penny earned. Monopolists can just pass costs on to their customers, but companies with a lot of competitors can’t. So American farmers who battle with each other (and increasingly with tough rivals in other countries) are eager to cut their spending on land, water, and fertilizer. Beer and soda companies want to minimize their aluminum purchases. Producers of magnets and high-tech gear run away from REE as soon as prices start to spike. In the United States, the 1980 Staggers Act removed government subsidies for freight-hauling railroads, forcing them into competition and cost cutting and making them all the more eager to not have expensive railcars sit idle. Again and again, we see that competition spurs dematerialization. There are multiple paths to dematerialization. As profit-hungry companies seek to use fewer resources, they can go down four main paths. First, they can simply find ways to use less of a given material. This is what happened as beverage companies and the companies that supply them with cans teamed up to use less aluminum. It’s also the story with American farmers, who keep getting bigger harvests while using less land, water, and fertilizer. Magnet makers found ways to use fewer rare earth metals when it looked as if China might cut off their supply. Second, it often becomes possible to substitute one resource for another. Total US coal consumption started to decrease after 2007 because fracking made natural gas more attractive to electricity generators. If nuclear power becomes more popular in the United States (a topic we’ll take up in chapter 15), we could use both less coal and less gas and generate our electricity from a small amount of material indeed. A kilogram of uranium-235 fuel contains approximately 2–3 million times as much energy as the same mass of coal or oil. According to one estimate, the total amount of energy that humans consume each year could be supplied by just seven thousand tons of uranium fuel. Third, companies can use fewer molecules overall by making better use of the materials they already own. Improving CNW’s railcar utilization from 5 percent to 10 percent would mean that the company could cut its stock of these thirty-ton behemoths in half. Companies that own expensive physical assets tend to be fanatics about getting as much use as possible out of them, for clear and compelling financial reasons. For example, the world’s commercial airlines have improved their load factors—essentially the percentage of seats occupied on flights—from 56 percent in 1971 to more than 81 percent in 2018. Finally, some materials get replaced by nothing at all. When a telephone, camcorder, and tape recorder are separate devices, three total microphones are needed. When they all collapse into a smartphone, only one microphone is necessary. That smartphone also uses no audiotapes, videotapes, compact discs, or camera film. The iPhone and its descendants are among the world champions of dematerialization. They use vastly less metal, plastic, glass, and silicon than did the devices they have replaced and don’t need media such as paper, discs, tape, or film. If we use more renewable energy, we’ll be replacing coal, gas, oil, and uranium with photons from the sun (solar power) and the movement of air (wind power) and water (hydroelectric power) on the earth. All three of these types of power are also among dematerialization’s champions, since they use up essentially no resources once they’re up and running. I call these four paths to dematerialization slim, swap, optimize, and evaporate. They’re not mutually exclusive. Companies can and do pursue all four at the same time, and all four are going on all the time in ways both obvious and subtle. Innovation is hard to foresee. Neither the fracking revolution nor the world-changing impact of the iPhone’s introduction were well understood in advance. Both continued to be underestimated even after they occurred. The iPhone was introduced in June of 2007, with no shortage of fanfare from Apple and Steve Jobs. Yet several months later the cover of Forbes was still asking if anyone could catch Nokia. Innovation is not steady and predictable like the orbit of the Moon or the accumulation of interest on a certificate of deposit. It’s instead inherently jumpy, uneven, and random. It’s also combinatorial, as Erik Brynjolfsson and I discussed in our book The Second Machine Age. Most new technologies and other innovations, we argued, are combinations or recombinations of preexisting elements. The iPhone was “just” a cellular telephone plus a bunch of sensors plus a touch screen plus an operating system and population of programs, or apps. All these elements had been around for a while before 2007. It took the vision of Steve Jobs to see what they could become when combined. Fracking was the combination of multiple abilities: to “see” where hydrocarbons were to be found in rock formations deep underground; to pump down pressurized liquid to fracture the rock; to pump up the oil and gas once they were released by the fracturing; and so on. Again, none of these was new. Their effective combination was what changed the world’s energy situation. Erik and I described the set of innovations and technologies available at any time as building blocks that ingenious people could combine and recombine into useful new configurations. These new configurations then serve as more blocks that later innovators can use. Combinatorial innovation is exciting because it’s unpredictable. It’s not easy to foresee when or where powerful new combinations are going to appear, or who’s going to come up with them. But as the number of both building blocks and innovators increases, we should have confidence that more breakthroughs such as fracking and smartphones are ahead. Innovation is highly decentralized and largely uncoordinated, occurring as the result of interactions among complex and interlocking social, technological, and economic systems. So it’s going to keep surprising us. As the Second Machine Age progresses, dematerialization accelerates. Erik and I coined the phrase Second Machine Age to draw a contrast with the Industrial Era, which as we’ve seen transformed the planet by allowing us to overcome the limitations of muscle power. Our current time of great progress with all things related to computing is allowing us to overcome the limitations of our mental power and is transformative in a different way: it’s allowing us to reverse the Industrial Era’s bad habit of taking more and more from the earth every year. Computer-aided design tools help engineers at packaging companies design generations of aluminum cans that keep getting lighter. Fracking took off in part because oil and gas exploration companies learned how to build accurate computer models of the rock formations that lay deep underground—models that predicted where hydrocarbons were to be found. Smartphones took the place of many separate pieces of gear. Because they serve as GPS devices, they’ve also led us to print out many fewer maps and so contributed to our current trend of using less paper. It’s easy to look at generations of computer paper, from 1960s punch cards to the eleven-by-seventeen-inch fanfold paper of the 1980s, and conclude that the Second Machine Age has caused us to chop down ever more trees. The year of peak paper consumption in the United States, however, was 1990. As our devices have become more capable and interconnected, always on and always with us, we’ve sharply turned away from paper. Humanity as a whole probably hit peak paper in 2013. As these examples indicate, computers and their kin help us with all four paths to dematerialization. Hardware, software, and networks let us slim, swap, optimize, and evaporate. I contend that they’re the best tools we’ve ever invented for letting us tread more lightly on our planet. All of these principles are about the combination of technological progress and capitalism, which are the first of the two pairs of forces causing dematerialization. Technology: The Human Interface with the Material World One of my favorite definitions of technology comes from the philosopher Emmanuel Mesthene, who called it “the organization of knowledge for the achievement of practical purposes.” Sometimes that knowledge is crystallized into products such as hammers and iPhones, and sometimes it exists as techniques such as those for fracking or precision agriculture. Like knowledge itself, technologies accumulate. We haven’t forgotten about the lever, the plow, or the steam engine in the Second Machine Age, and we haven’t had to give them up to use cloud computing or drones. Like innovation itself, technologies are combinatorial; most of them are combinations or recombinations of existing things. This implies that the number of potentially powerful new technologies increases over time because the number of available building blocks does. These facts help me understand why we didn’t start to dematerialize sooner. It could simply be that we didn’t have the right technologies, or enough building blocks, to allow large-scale dematerialization. We had technologies that made it feasible and profitable for us to grow by taking more and more from the earth—more and more metals, fuels, water, fertilizers, and so on—but not ones that made it possible to profitably grow while taking less and less. In the Second Machine Age, that has changed. My other preferred definition of technology comes from the great science fiction author Ursula K. Le Guin, who wrote, “Technology is the active human interface with the material world. Its technology is how a society copes with physical reality: how people get and keep and cook food, how they clothe themselves, what their power sources are (animal? human? water? wind? electricity? other?), what they build with and what they build, their medicine—and so on and on. Perhaps very ethereal people aren’t interested in these mundane, bodily matters, but I’m fascinated by them.” So am I, because these “mundane matters” have twice reshaped the world—first during the Industrial Era, when technological progress allowed us to prosper by taking more from the planet, and now in the Second Machine Age, when we’ve finally figured out how to prosper while taking less. Capitalism: Means of Production Capitalism and religion are the two subjects that leave the fewest people on the sidelines. People have very firmly held opinions on both topics, and few change their minds no matter what evidence and arguments are presented to them. Yet despite this clear history of intransigence, many thinkers and writers have tried to bring others around to their point of view on both topics. Most have failed. I’m going to join this long sad parade by arguing in favor of capitalism. Before I do that, though, I want to define what I’m talking about. Even more than is the case with technology, clear definitions are important with capitalism because it’s such a triggering word. As the psychologist Jonathan Haidt has pointed out, some hear it as a synonym for liberation, others for exploitation. But let me put the dictionary before the thesaurus and offer a definition of what capitalism is before suggesting what it’s like. For our purposes, capitalism is a way to come up with goods and services and get them to people. Every society that doesn’t want its people to starve or die of exposure has to accomplish this task; capitalism is simply one approach to doing it. The important features of this approach are: Profit-seeking companies. Under capitalism, most goods and services are produced by for-profit companies rather than nonprofits, the government, or individuals. Companies can be owned by only a few people (such as the partners in a law firm) or a great many (publicly traded companies have shareholders all over the world) and are assumed to last over time; they don’t have a predefined end date. Free market entry and competition. Companies can go after one another’s markets and customers; there are few if any protected monopolies. It might not be legal to completely copy a rival’s patented product, but it’s perfectly legal to try to come up with something better. In economist-speak, markets are contested. Similarly, people can take their skills from one market to another; they’re not tied to a single geography or job. Strong property rights and contract enforcement. Patents are a form of intellectual property. They can be bought and sold just as other kinds of property—from land to houses to cars—can. Laws and courts ensure that none of these kinds of property can be stolen or destroyed, even by large, powerful entities such as billionaires, giant corporations, or the government. Similarly, if a small company and a big one sign a contract to work together, neither party gets to unilaterally walk away from the agreement without fear of getting sued. Absence of central planning, control, and price setting. The government does not decide what goods and services are needed by people, or which companies should be allowed to produce them. No central body decides if there is “enough” volume and variety in smartphones, caffeinated beverages, steel girders, and so on. The prices of these and most other goods and services are allowed to vary based on the balance of supply and demand, rather than being set in advance or adjusted by any central authority. Private ownership of most things. Smartphones, cups of coffee, steel girders, and most other products are owned by the people or companies that bought them. The companies that produced these things are also owned by people. Many shares of Apple, Starbucks, US Steel, and other public companies are held by mutual funds, pension funds, and hedge funds, but all these funds are themselves ultimately owned by people. Most houses, cars, land, gold, Bitcoin, and other assets are also owned by people rather than the government. Voluntary exchange. The phrase most closely associated with capitalism is voluntary exchange. People can’t be forced to buy specific products, take a certain job, or move across the country. Companies don’t have to sell themselves if they don’t want to. They also don’t have to make some products and not others, or stay within specific markets. The Waffle House chain doesn’t have any of its breakfast restaurants in my state of Massachusetts, but that’s not because lawmakers there are keeping it out. The legislature in Boston doesn’t have that power. I want to highlight a couple of things about this definition. First, capitalism is not without oversight. The government has clear roles to play in establishing laws and settling disputes (to say nothing of setting tax rates, controlling the money supply, and doing other things of critical economic importance). As we’ll see in the next two chapters, every sane advocate of capitalism also recognizes that while voluntary exchange and free market entry are great, they don’t create utopia. Some important “market failures” need to be corrected by government action. The second thing I want to point out is that all of today’s rich countries are capitalist, by this definition. This is not to say that all capitalist countries are alike. Denmark, South Korea, and the United States are very different places. They have dissimilar trade policies, tax systems, social safety nets, industrial structures, and so on. But they all have all of the things listed above; they are all inherently capitalist. Denmark’s economy is not planned and controlled out of Copenhagen, people in Korea own their own houses and furniture,III and contracts in America are generally respected and enforced. Today’s poorer countries, in sharp contrast, reliably do not have all of the things listed above. Their governments tend to run such things as airlines and telephone networks that are run by private companies in rich countries. It’s generally much harder to start a company in less affluent countries, so free market entry and competition are constrained. According to the World Bank, in 2017 it took less than six days to start a business in America, Denmark, Singapore, Australia, and Canada, and seventy days or more in Somalia, Brazil, and Cambodia. The world champion of entrepreneurial sclerosis was Venezuela (a country we’ll talk more about in the next chapter), at two hundred and thirty days. In poorer countries, it’s also often not clear who owns what. Things that are taken for granted in the rich world, such as unambiguous land registries and clear title to houses and other property, are problematic in many developing countries. The biggest difference between rich and poor countries might be whether laws are clearly and consistently enforced. Poorer countries don’t lack laws; they often have extensive legal codes. What’s in short supply is justice for all. Officials are corrupt; the elite get special treatment and rarely lose in court; police, regulators, and inspectors can expect bribes; and contested markets, property rights, and voluntary exchange suffer in countless other ways. It’s not that these abuses don’t occur in rich countries, but they occur much, much less often. I’ll make some more points about capitalism in the next chapter. To wrap up this one, I want to emphasize how well technological progress and capitalism work together. Overcoming the Limits A great way to see what happens when capitalism and tech progress combine is to look back at 1972’s The Limits to Growth, which we first came across in chapter 4. It’s a fascinating document for two reasons. First, it’s one of the most Malthusian books written since Malthus. It’s far gloomier than anything Jevons came up with. The team behind The Limits to Growth tried to model the future of the exponentially growing world economy and concluded, “We can thus say with some confidence that, under the assumption of no major change in the present system, population and industrial growth will certainly stop within the [twenty-first] century, at the latest. The system… collapses because of a resource crisis.” Second, The Limits to Growth provided an invaluable service by recording what the known global reserves of important resources were in 1972. “Known global reserves” are the deposits of a resource that can be profitably extracted given the prevailing knowledge and state of technology. The authors of The Limits to Growth included the known reserves of many resources to show how inadequate they were in the face of exponential growth of both output and resource consumption. The authors had little reason to suppose in the early 1970s that either kind of growth would stop on its own. As we saw in chapter 4, resource consumption went up in lockstep with overall economic output all throughout the twentieth century up to Earth Day. Few people expected that to change. The team behind The Limits to Growth certainly didn’t. The most generous estimate of future resource availability included in The Limits to Growth assumed that exponential consumption would continue, and that proven reserves were actually five times greater than commonly assumed. Under these conditions, the team’s computer models showed that the planet would run out of gold within twenty-nine years of 1972; silver within forty-two years; copper and petroleum within fifty; and aluminum within fifty-five. These weren’t accurate predictions. We still have gold and silver, and we still have large reserves of them. In fact, the reserves of both are actually much bigger than in 1972, despite almost half a century of additional consumption. Known global reserves of gold are almost 400 percent larger today than in 1972, and silver reserves are more than 200 percent larger. And it’s probably not too early to say that we’re not going to run out of copper, aluminum, and petroleum as quickly as estimated in The Limits to Growth. Known reserves of all are much larger than they were when the book was published. Known aluminum reserves are almost twenty-five times what they were in the early 1970s. How could these predictions about resource availability, which were taken seriously when they were released, have been so wrong? Because the Limits to Growth team pretty clearly underestimated both dematerialization and the endless search for new reserves. Capitalism and tech progress combine to drive both of these trends—the use of fewer resources and the hunt for more of them—and neither of these two drivers is about to become less powerful. So we’ll continue to innovate our way to greater dematerialization while we keep finding more reserves. The counterintuitive conclusion from this line of reasoning is that resource scarcity isn’t something we need to worry about. The earth is finite, so the total quantity of resources such as gold and petroleum is limited. But the earth is also very, very big—big enough to contain all we need of these and other resources, for as long as we’ll need them. The image of a thinly supplied Spaceship Earth hurtling through the cosmos with us aboard is compelling, but deeply misleading. Our planet has amply supplied us for our journey. Especially since we’re quickly slimming, swapping, optimizing, and evaporating our way to dematerialization. The Second Enlightenment Abraham Lincoln, the only US president to hold a patent,IV had a deep insight about capitalism. He wrote that the patent system “added the fuel of interest to the fire of genius in the discovery and production of new and useful things.” “The fire of genius” is a wonderful label for technological progress. “The fuel of interest” is equally good as a summary of capitalism. They interact in a self-reinforcing and ever-expanding cycle, and they’re now creating a dematerializing world. Innovators come up with new and useful technologies. They then partner with entrepreneurs or become entrepreneurs themselves as James Watt did. A new company is the result. Investors such as steam-engine backer Matthew Boulton often join in to provide the capital needed for growth in its early days. The start-up enters a market and takes on incumbents like the Newcomen steam engine. Customers like the new technology better and are free to choose it. Rivals can’t just copy the new technology because it’s protected by patents. So they either have to license it or come up with innovations themselves. The start-up grows and prospers and eventually becomes the new incumbent. Its success inspires the next round of innovators, entrepreneurs, and investors, who once again take aim at the incumbent by offering something better to their customers. Because of free market entry, the next innovators and start-ups can come from anywhere. And because innovation is such a distributed, dynamic, and unpredictable activity, it often comes from an unexpected place. It’s not necessary to plan this process. In fact, it’s a terrible idea to try to do so. Any central planner will miss many of the actual innovators or actively try to squelch them to protect the status quo of which the planners themselves are a part. This cycle of capitalist, technology-rich “creative destruction” was beautifully described in the middle of the twentieth century by the Austrian economist Joseph Schumpeter. But since the late nineteenth century and the work of Alfred Marshall and William Jevons, we’ve believed that this cycle would cause us to use up more and more of our planet’s resources. This was true throughout the Industrial Era, and especially in the years around Earth Day and the birth of the modern environmental movement. Environmentalists’ urgent cautions about resource use and planetary depletion were born out of an awareness of how powerfully technological progress and capitalism interacted. But then, for the reasons described in this chapter, that interaction changed. Tech progress and capitalism continued to reinforce each other, and to cause economies to get bigger and people to become more prosperous. But instead of also causing greater use of natural resources, they instead sparked dematerialization, something truly new under the sun. The fuel of interest in eliminating costs was added to the fire of the computer revolution, and the world began to dematerialize. The economic historian Joel Mokyr argues that the Industrial Era was made possible by the values of the Enlightenment. This intellectual movement began in the second half of the eighteenth century with many societies in the West embracing what Steven Pinker characterizes as four values: reason, science, humanism, and progress. According to Mokyr, the Enlightenment created a “culture of growth” that let both capitalism and technological progress flourish. I see an interesting inversion taking place now. If the Enlightenment led to the Industrial Era, then the Second Machine Age has led to a Second Enlightenment—a more literal one. We are now lightening our total consumption and treading more lightly on our planet. In America, the United Kingdom, and other rich countries, we are past “peak stuff” and are now using fewer total resources year after year. We’re accomplishing this because of the combination of technological progress and capitalism, which now let us get more from less.

#### Transition fails—growth bias overwhelms, authoritarian fill-in, and 2008 proves.

Burch-Hansen 18—(Department of Business and Politics, Copenhagen Business School). Hubert Buch-Hansen. “The Prerequisites for a Degrowth Paradigm Shift: Insights from Critical Political Economy,” Ecological Economics, Volume 146, April 2018, pp. 157-163.

Political projects do not become hegemonic just because they embody good ideas. For a project to become hegemonic, (organic) intellectuals first need to develop the project and a constellation of social forces with sufficient power and resources to implement it then needs to find it appealing and struggle for it. In this context, it is worth noting that degrowth, as a social movement, has been gaining momentum for some time, not least in Southern Europe. Countless grassroots' initiatives (e.g., D'Alisa et al., 2013) are the most visible manifestations that degrowth is on the rise. Intellectuals – including founders of ecological economics such as Nicholas Georgescu-Roegen and Herman Daly, and more recently degrowth scholars such as Serge Latouche and Giorgos Kallis – have played a major role in developing and disseminating the ideas underpinning the project. A growing interest in degrowth in academia, as well as well-attended biennial international degrowth conferences, also indicate that an increasing number of people embrace such ideas. Still, the degrowth project is nowhere near enjoying the degree and type of support it needs if its policies are to be implemented through democratic processes. The number of political parties, labour unions, business associations and international organisations that have so far embraced degrowth is modest to say the least. Economic and political elites, including social democratic parties and most of the trade union movement, are united in the belief that economic growth is necessary and desirable. This consensus finds support in the prevailing type of economic theory and underpins the main contenders in the neoliberal project, such as centre-left and nationalist projects. In spite of the world's multidimensional crisis, a pro-growth discourse in other words continues to be hegemonic: it is widely considered a matter of common sense that continued economic growth is required. It is also noteworthy that economic and political elites, to a large extent, continue to support the neoliberal project, even in the face of its evident shortcomings. Indeed, the 2008 financial crisis did not result in the weakening of transnational financial capital that could have paved the way for a paradigm shift. Instead of coming to an end, neoliberal capitalism has arguably entered a more authoritarian phase (Bruff, 2014). The main reason the power of the pre-crisis coalition remains intact is that governments stepped in and saved the dominant fraction by means of massive bailouts. It is a foregone conclusion that this fraction and the wider coalition behind the neoliberal paradigm (transnational industrial capital, the middle classes and segments of organized labour) will consider the degrowth paradigm unattractive and that such social forces will vehemently oppose the implementation of degrowth policies (see also Rees, 2014: 97). While degrowth advocates envision a future in which market forces play a less prominent role than they do today, degrowth is not an anti-market project. As such, it can attract support from certain types of market actors. In particular, it is worth noting that social enterprises, such as cooperatives (Restakis, 2010), play a major role in the degrowth vision. Such enterprises are defined by being ‘organisations involved at least to some extent in the market, with a clear social, cultural and/or environmental purpose, rooted in and serving primarily the local community and ideally having a local and/or democratic ownership structure’ (Johanisova et al., 2013: 11). Social enterprises currently exist at the margins of a system, in which the dominant type of business entity is profit-oriented, shareholder-owned corporations. The further dissemination of social enterprises, which is crucial to the transitions to degrowth societies, is – in many cases – blocked or delayed as a result of the centrifugal forces of global competition (Wigger and Buch-Hansen, 2013). Overall, social enterprises thus (still) constitute a social force with modest power. Ougaard (2016: 467) notes that one of the major dividing lines in the contemporary transnational capitalist class is between capitalists who have a material interest in the carbon-based economy and capitalists who have a material interest in decarbonisation. The latter group, for instance, includes manufacturers of equipment for the production of renewable energy (ibid.: 467). As mentioned above, degrowth advocates have singled out renewable energy as one of the sectors that needs to grow in the future. As such, it seems likely that the owners of national and transnational companies operating in this sector would be more positively inclined towards the degrowth project than would capitalists with a stake in the carbon-based economy. Still, the prospect of the “green sector” emerging as a driving force behind degrowth currently appears meagre. Being under the control of transnational capital (Harris, 2010), such companies generally embrace the “green growth” discourse, which ‘is deeply embedded in neoliberal capitalism’ and indeed serves to adjust this form of capitalism ‘to crises arising from contradictions within itself’ (Wanner, 2015: 23). In addition to support from the social forces engendered by the production process, a political project ‘also needs the political ability to mobilize majorities in parliamentary democracies, and a sufficient measure of at least passive consent’ (van Apeldoorn and Overbeek, 2012: 5–6) if it is to become hegemonic. As mentioned, degrowth enjoys little support in parliaments, and certainly the pro-growth discourse is hegemonic among parties in government.5 With capital accumulation being the most important driving force in capitalist societies, political decision-makers are generally eager to create conditions conducive to production and the accumulation of capital (Lindblom, 1977: 172). Capitalist states and international organisations are thus “programmed” to facilitate capital accumulation, and do as such constitute a strategically selective terrain that works to the disadvantage of the degrowth project. The main advocates of the degrowth project are grassroots, small fractions of left-wing parties and labour unions as well as academics and other citizens who are concerned about social injustice and the environmentally unsustainable nature of societies in the rich parts of the world. The project is thus ideationally driven in the sense that support for it is not so much rooted in the material circumstances or short-term self-interests of specific groups or classes as it is rooted in the conviction that degrowth is necessary if current and future generations across the globe are to be able to lead a good life. While there is no shortage of enthusiasts and creative ideas in the degrowth movement, it has only modest resources compared to other political projects. To put it bluntly, the advocates of degrowth do not possess instruments that enable them to force political decision-makers to listen to – let alone comply with – their views. As such, they are in a weaker position than the labour union movement was in its heyday, and they are in a far weaker position than the owners and managers of large corporations are today (on the structural power of transnational corporations, see Gill and Law, 1989). 6. Consent It is also safe to say that degrowth enjoys no “passive consent” from the majority of the population. For the time being, degrowth remains unknown to most people. Yet, if it were to become generally known, most people would probably not find the vision of a smaller economic system appealing. This is not just a matter of degrowth being ‘a missile word that backfires’ because it triggers negative feelings in people when they first hear it (Drews and Antal, 2016). It is also a matter of the actual content of the degrowth project. Two issues in particular should be mentioned in this context. First, for many, the anti-capitalist sentiments embodied in the degrowth project will inevitably be a difficult pill to swallow. Today, the vast majority of people find it almost impossible to conceive of a world without capitalism. There is a ‘widespread sense that not only is capitalism the only viable political and economic system, but also that it is now impossible to even imagine a coherent alternative to it’ (Fisher, 2009: 2). As Jameson (2003) famously observed, it is, in a sense, easier to imagine the end of the world than it is to imagine the end of capitalism. However, not only is degrowth – like other anti-capitalist projects – up against the challenge that most people consider capitalism the only system that can function; it is also up against the additional challenge that it speaks against economic growth in a world where the desirability of growth is considered common sense. Second, degrowth is incompatible with the lifestyles to which many of us who live in rich countries have become accustomed. Economic growth in the Western world is, to no small extent, premised on the existence of consumer societies and an associated consumer culture most of us find it difficult to completely escape. In this culture, social status, happiness, well-being and identity are linked to consumption (Jackson, 2009). Indeed, it is widely considered a natural right to lead an environmentally unsustainable lifestyle – a lifestyle that includes car ownership, air travel, spacious accommodations, fashionable clothing, an omnivorous diet and all sorts of electronic gadgets. This Western norm of consumption has increasingly been exported to other parts of the world, the result being that never before have so many people taken part in consumption patterns that used to be reserved for elites (Koch, 2012). If degrowth were to be institutionalised, many citizens in the rich countries would have to adapt to a materially lower standard of living. That is, while the basic needs of the global population can be met in a non-growing economy, not all wants and preferences can be fulfilled (Koch et al., 2017). Undoubtedly, many people in the rich countries would experience various limitations on their consumption opportunities as a violent encroachment on their personal freedom. Indeed, whereas many recognize that contemporary consumer societies are environmentally unsustainable, fewer are prepared to actually change their own lifestyles to reverse/address this.

#### Data shows growth solves poverty and doesn’t cause inequality—regression proves no alt-causes.

Dollar 16—(senior fellow at the Brookings Institution, doctorate in economics from New York University, former professor of economics at University of California Los Angeles). Dollar, David, Tatjana Kleineberg, and Aart Kraay. 2016. “Growth Still Is Good for the Poor.” European Economic Review 81 (January): 68–85. <https://doi.org/10.1016/j.euroecorev.2015.05.008>.

Average incomes in the poorest two quintiles on average increase at the same rate as overall average incomes. This is because, in a global dataset spanning 121 countries over the past four decades, changes in the share of income of the poorest quintiles are uncorrelated with changes in average income. The variation in changes in quintile shares is also small relative to the variation in growth in average incomes, implying that the latter accounts for most of the variation in income growth in the poorest quintiles. In addition, we find little evidence that changes in the bottom quintile shares are correlated with country-level factors that are typically considered as important determinants for growth in average incomes or for changes in inequality. This evidence confirms the central importance of economic growth for improvements in living standards at the low end of the income distribution. It also illustrates the difficulty of identifying specific macroeconomic policies that are significantly associated with the growth rates of those in the poorest quintiles relative to everyone else. 1. Introduction Absolute poverty has fallen sharply in the developing world over the past three decades. In 1980, 52 percent of the world’s population lived below the World Bank’s $1.25/day poverty line. By 1990, the incidence of poverty had fallen to 42 percent, and to 21 percent in 2010. Much of this reduction has been due to rapid growth in large and initially poor developing countries such as China and India. But in all regions of the world, rapid growth has been systematically associated with sharp declines in absolute poverty. This success in poverty reduction has meant that low global absolute poverty lines, like the World Bank’s $1.25/day standard, have become less relevant for many developing countries where today only a small fraction of the population lives below this austere threshold. This led the World Bank to put a new institutional emphasis on tracking “shared prosperity”, in addition to monitoring absolute poverty. “Shared prosperity” is defined in terms of the growth rate of incomes in the bottom 40 percent of households within each country, and the World Bank has made a public commitment to supporting policies that foster “shared prosperity” in the developing world1 . Concerns about “shared prosperity” are also widespread in advanced economies, where many fear that growth no longer benefits those near the bottom of the income distribution2. This emphasis on “shared prosperity” naturally raises the question of the extent to which it differs from simply “prosperity”, where the latter could be defined as overall aggregate income growth. In this paper, we address this question, updating and elaborating on our earlier work in Dollar and Kraay (2002). In that paper, we studied the relationship between growth in average incomes of the poorest 20 percent of the population, and growth in average incomes, using a large cross-country panel dataset on average incomes and inequality. Our main findings in that paper were that (i) mean incomes in the poorest quintile on average increase equiproportionately with average incomes, reflecting the lack of a systematic correlation between growth and changes in the first quintile share, and (ii) this relationship is very strong, reflecting the fact that most of the variation in growth in incomes in the poorest quintile is attributable to growth in average incomes, rather than changes in the share of income accruing to the poorest quintile. Over the past 15 years since we began work on that paper, the quality and quantity of available household survey data on income distribution have improved dramatically, providing rich new information that can be used to revisit the evidence on the relationship between overall growth and growth in the poorest quintiles. We work with a large cross-country dataset of high-quality survey based measures of average incomes and income distributions, drawing on the POVCALNET database3 of the World Bank for developing countries, and the Luxembourg Income Study (LIS) data4 for advanced economies. Using this combined dataset, which covers 121 countries for which household surveys are available for at least two years since the 1970s, we revisit the relationship between growth in average incomes and growth in the poorest quintiles. Updating the work in Dollar and Kraay (2002), we consider growth rates of average incomes in the poorest 20 percent of the population, and given the new emphasis at the World Bank on “shared prosperity”, we also consider growth rates of average incomes in the poorest 40 percent of the population. Echoing our earlier work, this expanded and updated dataset reveals a very strong equiproportionate relationship between average incomes in the poorest quintiles, and overall average incomes. In our benchmark specification, covering 285 nonoverlapping within-country growth episodes at least five years long, the slope of the relationship between growth in average incomes in the poorest quintiles and growth in overall average incomes is very close to – and not significantly different from – one. Moreover, a standard variance decomposition indicates that 61 percent (77 percent) of the cross-country variation in growth in incomes of the poorest 20 percent (40 percent) is due to growth in average incomes. This basic result underscores the central importance of overall growth for improvements in living standards among the poorest in societies. Although the portion of the variation in growth in incomes in the poorest quintiles due to changes in inequality is – on average – both small and uncorrelated with growth in average incomes, it is nevertheless important to understand its other correlates. In particular, if one combination of macroeconomic policies and institutions that supports a given aggregate growth rate also leads to an increase in the share of incomes accruing to the poorest quintiles, while another combination did the opposite, then the former would be preferable from the standpoint of promoting shared prosperity. We therefore investigate how growth in the income share of the poorest 20 and 40 percent correlates with a variety of country-level variables commonly thought to matter for growth (e.g. financial depth, financial openness, the inflation rate, the budget balance, trade openness, life expectancy, measures of internal and external conflicts, population growth, life expectancy, and civil liberties), as well as a number of variables often considered to matter directly for inequality (e.g. initial inequality, primary school enrollments, inequality in educational attainment, and agricultural productivity). In the spirit of systematic data description, we use Bayesian Model Averaging to document the partial correlations between these variables and growth in the income share of the poor for all possible combinations of these variables. We find at best very modest evidence that any of the policies and institutions reflected in these variables are significantly correlated with changes in the income share of the bottom 20 and 40 percent of the income distribution. These findings illustrate the difficulty in using cross-national data to identify specific country-level correlates of growth in the income share of the poorest income quintiles. Moreover, the particularly strong relationship between growth in incomes of the bottom 40 percent and growth in average incomes, and the lack of evidence of systematic correlates of the difference between the two, underscores the central importance of rapid growth in average incomes as a means to achieving “shared prosperity”. Of course, this largely inconclusive finding on the links between the explanatory variables we considered and inequality changes does not imply that policymakers should not care about changes in inequality and how they matter for incomes at the low end of the income distribution. Purely from an econometric standpoint, a reasonable interpretation of our empirical findings in the last part of the paper is that cross-country regressions such as those we estimate are too blunt a tool to conclusively identify systematic correlates of inequality changes. Moreover in at least some episodes in our dataset, we observe large inequality increases that have resulted in growth in average incomes in the poorest quintiles lagging substantially behind growth in average incomes, while the opposite is true in other spells. It is a truism that all policies have distributional consequences that policymakers should consider before pursuing them. However, the fact that in the data we observe essentially a zero correlation between growth and inequality changes suggests that some policies that are good for growth in average incomes will also lead to increases in inequality, while others will lead to decreases in inequality. Similarly, other policies that might reduce inequality will lead to faster growth, while others to slower growth. The challenge for policymakers who often find themselves under pressure to “do something” about inequality is to avoid choosing combinations of policy interventions that reduce inequality but that might decrease “shared prosperity” if these policies at the same time undermine growth. This paper contributes to a large empirical literature on the relationship between growth and changes in inequality. Most immediately, this paper updates, extends, and improves upon Dollar and Kraay (2002). In that paper, we studied the relationship between growth and inequality changes using data available at the time through the late 1990s, and drawing primarily on the Deininger and Squire (1996) compilation of cross-country data on income inequality (the predecessor of the UN WIDER World Income Inequality Database). While this dataset was the largest cross-national compendium of inequality data available at the time, it suffered from a number of shortcomings, that are discussed in detail in Atkinson and Brandolini (2001) and more recently by Jenkins (2014). Relative to our previous work, the main innovation in this paper is to rely instead on two much more reliable compilations of cross-country data on income inequality discussed in more detail below: the World Bank’s PovcalNet database for developing countries and the Luxembourg Income Study database for OECD economies. Not only are the quality and comparability of the inequality data in these two compilations much better, but also both sources provide data on household average income taken from the same survey as the inequality data. This allows us to relate changes in survey mean income to changes in inequality, rather than using growth in per capita GDP as we did in our previous paper. This paper is also closely related to – and shares a common dataset with – our companion paper (Dollar et al., 2015). In that paper, we empirically document the relationship between growth in average incomes and growth in a wide variety of social welfare functions, of which average incomes in the bottom 20 and 40 percent are two specific examples. Finally, our work in all three papers can be viewed as contributing to a larger literature that has also documented a lack of any systematic correlation between growth and inequality changes (see for example Bruno et al., 1998; Ravallion, 2007; Ferreira and Ravallion, 2009). The rest of this paper proceeds as follows. Section 2 describes our empirical framework, as well as the cross-country panel of household survey data on which our results are based. Section 3 presents our core results on the bivariate relationship between growth in incomes of the poor and growth in average incomes, documenting two key features of the data: growth in average incomes and growth in the income share of the poorest quintiles are uncorrelated, and the variance of the former generally is much larger than the variance of the latter. Section 4 provides additional empirical evidence on the correlation between growth in the income shares of the poorest quintiles and an array of variables from the cross-country growth literature. Section 5 concludes.

#### Realism is true — alternatives exacerbate war and structural violence – they can’t change Xi’s decision calculus or prevent war

de Araujo 14 — Marcelo de Araujo (professor for Ethics at Universidade do Estado do Rio de Janeiro), “Moral Enhancement and Political Realism,” Journal of Evolution and Technology 24(2): 29-43)

Some moral enhancement theorists argue that a society of morally enhanced individuals would be in a better position to cope with important problems that humankind is likely to face in the future such as, for instance, the threats posed by climate change, grand scale terrorist attacks, or the risk of catastrophic wars. The assumption here is quite simple: our inability to cope successfully with these problems stems mainly from a sort of deficit in human beings’ moral motivation. If human beings were morally better – if we had enhanced moral dispositions – there would be fewer wars, less terrorism, and more willingness to save our environment. Although simple and attractive, this assumption is, as I intend to show, false. At the root of threats to the survival of humankind in the future is not a deficit in our moral dispositions, but the endurance of an old political arrangement that prevents the pursuit of shared goals on a collective basis. The political arrangement I have in mind here is the international system of states. In my analysis of the political implications of moral enhancement, I intend to concentrate my attention only on the supposition that we could avoid major wars in the future by making individuals morally better. I do not intend to discuss the threats posed by climate change, or by terrorism, although some human enhancement theorists also seek to cover these topics. I will explain, in the course of my analysis, a conceptual distinction between “human nature realism” and “structural realism,” well-known in the field of international relations theory. Thomas Douglas seems to have been among the first to explore the idea of “moral enhancement” as a new form of human enhancement. He certainly helped to kick off the current phase of the debate. In a paper published in 2008, Douglas suggests that in the “future people might use biomedical technology to morally enhance themselves.” Douglas characterizes moral enhancement in terms of the acquisition of “morally better motives” (Douglas 2008, 229). Mark Walker, in a paper published in 2009, suggests a similar idea. He characterizes moral enhancement in terms of improved moral dispositions or “genetic virtues”: The Genetic Virtue Program (GVP) is a proposal for influencing our moral nature through biology, that is, it is an alternate yet complementary means by which ethics and ethicists might contribute to the task of making our lives and world a better place. The basic idea is simple enough: genes influence human behavior, so altering the genes of individuals may alter the influence genes exert on behavior. (Walker 2009, 27–28) Walker does not argue in favor of any specific moral theory, such as, for instance, virtue ethics. Whether one endorses a deontological or a utilitarian approach to ethics, he argues, the concept of virtue is relevant to the extent that virtues motivate us either to do the right thing or to maximize the good (Walker 2009, 35). Moral enhancement theory, however, does not reduce the ethical debate to the problem of moral dispositions. Morality also concerns, to a large extent, questions about reasons for action. And moral enhancement, most certainly, will not improve our moral beliefs; neither could it be used to settle moral disagreements. This seems to have led some authors to criticize the moral enhancement idea on the ground that it neglects the cognitive side of our moral behavior. Robert Sparrow, for instance, argues that, from a Kantian point of view, moral enhancement would have to provide us with better moral beliefs rather than enhanced moral motivation (Sparrow 2014, 25; see also Agar 2010, 74). Yet, it seems to me that this objection misses the point of the moral enhancement idea. Many people, across different countries, already share moral beliefs relating, for instance, to the wrongness of harming or killing other people arbitrarily, or to the moral requirement to help people in need. They may share moral beliefs while not sharing the same reasons for these beliefs, or perhaps even not being able to articulate the beliefs in the conceptual framework of a moral theory (Blackford 2010, 83). But although they share some moral beliefs, in some circumstances they may lack the appropriate motivation to act accordingly. Moral enhancement, thus, aims at improving moral motivation, and leaves open the question as to how to improve our moral judgments. In a recent paper, published in The Journal of Medical Ethics, neuroscientist Molly Crockett reports the state of the art in the still very embryonic field of moral enhancement. She points out, for example, that the selective serotonin reuptake inhibitor (SSRI) citalopram seems to increase harm aversion. There is, moreover, some evidence that this substance may be effective in the treatment of specific types of aggressive behavior. Like Douglas, Crockett emphasizes that moral enhancement should aim at individuals’ moral motives (Crockett 2014; see also Spence 2008; Terbeck et al. 2013). Another substance that is frequently mentioned in the moral enhancement literature is oxytocin. Some studies suggest that willingness to cooperate with other people,and to trust unknown prospective cooperators, may be enhanced by an increase in the levels of oxytocin in the organism (Zak 2008, 2011; Zak and Kugler 2011; Persson and Savulescu 2012, 118–119). Oxytocin has also been reported to be “associated with the subjective experience of empathy” (Zak 2011, 55; Zak and Kugler 2011, 144). The question I would like to examine now concerns the supposition that moral enhancement – comprehended in these terms and assuming for the sake of argument that, some day, it might become effective and safe – may also help us in coping with the threat of devastating wars in the future. The assumption that there is a relationship between, on the one hand, threats to the survival of humankind and, on the other, a sort of “deficit” in our moral dispositions is clearly made by some moral enhancements theorists. Douglas, for instance, argues that “according to many plausible theories, some of the world’s most important problems — such as developing world poverty, climate change and war — can be attributed to these moral deficits” (2008, 230). Walker, in a similar vein, writes about the possibility of “using biotechnology to alter our biological natures in an effort to reduce evil in the world” (2009, 29). And Julian Savulescu and Ingmar Persson go as far as to defend the “the need for moral enhancement” of humankind in a series of articles, and in a book published in 2012. One of the reasons Savulescu and Persson advance for the moral enhancement of humankind is that our moral dispositions seem to have remained basically unchanged over the last millennia (Persson and Savulescu 2012, 2). These dispositions have proved thus far quite useful for the survival of human beings as a species. They have enabled us to cooperate with each other in the collective production of things such as food, shelter, tools, and farming. They have also played a crucial role in the creation and refinement of a variety of human institutions such as settlements, villages, and laws. Although the possibility of free-riding has never been fully eradicated, the benefits provided by cooperation have largely exceeded the disadvantages of our having to deal with occasional uncooperative or untrustworthy individuals (Persson and Savulescu 2012, 39). The problem, however, is that the same dispositions that have enabled human beings in the past to engage in the collective production of so many artifacts and institutions now seem powerless in the face of the human capacity to destroy other human beings on a grand scale, or perhaps even to annihilate the entire human species. There is, according to Savulescu and Persson, a “mismatch” between our cognitive faculties and our evolved moral attitudes: “[…] as we have repeatedly stressed, owing to the progress of science, the range of our powers of action has widely outgrown the range of our spontaneous moral attitudes, and created a dangerous mismatch” (Persson and Savulescu 2012, 103; see also Persson and Savulescu 2010, 660; Persson and Savulescu 2011b; DeGrazie 2012, 2; Rakić 2014, 2). This worry about the mismatch between, on the one hand, the modern technological capacity to destroy and, on the other, our limited moral commitments is not new. The political philosopher Hans Morgenthau, best known for his defense of political realism, called attention to the same problem nearly fifty years ago. In the wake of the first successful tests with thermonuclear bombs, conducted by the USA and the former Soviet Union, Morgenthau referred to the “contrast” between the technological progress of our age and our feeble moral attitudes as one of the most disturbing dilemmas of our time: The first dilemma consists in the contrast between the technological unification of the world and the parochial moral commitments and political institutions of the age. Moral commitments and political institutions, dating from an age which modern technology has left behind, have not kept pace with technological achievements and, hence, are incapable of controlling their destructive potentialities. (Morgenthau 1962, 174) Moral enhancement theorists and political realists like Morgenthau, therefore, share the thesis that our natural moral dispositions are not strong enough to prevent human beings from endangering their own existence as a species. But they differ as to the best way out of this quandary: moral enhancement theorists argue for the re-engineering of our moral dispositions, whereas Morgenthau accepted the immutability of human nature and argued, instead, for the re-engineering of world politics. Both positions, as I intend to show, are wrong in assuming that the “dilemma” results from the weakness of our spontaneous moral dispositions in the face of the unprecedented technological achievements of our time. On the other hand, both positions are correct in recognizing the real possibility of global catastrophes resulting from the malevolent use of, for instance, biotechnology or nuclear capabilities. The supposition that individuals’ unwillingness to cooperate with each other, even when they would be better-off by choosing to cooperate, results from a sort of deficit of dispositions such as altruism, empathy, and benevolence has been at the core of some important political theories. This idea is an important assumption in the works of early modern political realists such as Machiavelli and Thomas Hobbes. It was also later endorsed by some well-known authors writing about the origins of war in the first half of the twentieth century. It was then believed, as Sigmund Freud suggested in a text from 1932, that the main cause of wars is a human tendency to “hatred and destruction” (in German: ein Trieb zum Hassen und Vernichtung). Freud went as far as to suggest that human beings have an ingrained “inclination” to “aggression” and “destruction” (Aggressionstrieb, Aggressionsneigung, and Destruktionstrieb), and that this inclination has a “good biological basis” (biologisch wohl begründet) (Freud 1999, 20–24; see also Freud 1950; Forbes 1984; Pick 1993, 211–227; Medoff 2009). The attempt to employ Freud’s conception of human nature in understanding international relations has recently been resumed, for instance by Kurt Jacobsen in a paper entitled “Why Freud Matters: Psychoanalysis and International Relations Revisited,” published in 2013. Morgenthau himself was deeply influenced by Freud’s speculations on the origins of war.1 Early in the 1930s, Morgenthau wrote an essay called “On the Origin of the Political from the Nature of Human Beings” (Über die Herkunft des Politischen aus dem Wesen des Menschen), which contains several references to Freud’s theory about the human propensity to aggression.2 Morgenthau’s most influential book, Politics among Nations: The Struggle for Power and Peace, first published in 1948 and then successively revised and edited, is still considered a landmark work in the tradition of political realism. According to Morgenthau, politics is governed by laws that have their origin in human nature: “Political realism believes that politics, like society in general, is governed by objective laws that have their roots in human nature” (Morgenthau 2006, 4). Just like human enhancement theorists, Morgenthau also takes for granted that human nature has not changed over recent millennia: “Human nature, in which the laws of politics have their roots, has not changed since the classical philosophies of China, India, and Greece endeavored to discover these laws” (Morgenthau 2006, 4). And since, for Morgenthau, human nature prompts human beings to act selfishly, rather than cooperatively, political leaders will sometimes favor conflict over cooperation, unless some superior power compels them to act otherwise. Now, this is exactly what happens in the domain of international relations. For in the international sphere there is not a supranational institution with the real power to prevent states from pursuing means of self-defense. The acquisition of means of self-defense, however, is frequently perceived by other states as a threat to their own security. This leads to the security dilemma and the possibility of war. As Morgenthau put the problem in an article published in 1967: “The actions of states are determined not by moral principles and legal commitments but by considerations of interest and power” (1967, 3). Because Morgenthau and early modern political philosophers such as Machiavelli and Hobbes defended political realism on the grounds provided by a specific conception human nature, their version of political realism has been frequently called “human nature realism.” The literature on human nature realism has become quite extensive (Speer 1968; Booth 1991; Freyberg-Inan 2003; Kaufman 2006; Molloy 2006, 82–85; Craig 2007; Scheuerman 2007, 2010, 2012; Schuett 2007; Neascu 2009; Behr 2010, 210–225; Brown 2011; Jütersonke 2012). It is not my intention here to present a fully-fledged account of the tradition of human nature realism, but rather to emphasize the extent to which some moral enhancement theorists, in their description of some of the gloomy scenarios humankind is likely to face in the future, implicitly endorse this kind of political realism. Indeed, like human nature realists, moral enhancement theorists assume that human nature has not changed over the last millennia, and that violence and lack of cooperation in the international sphere result chiefly from human nature’s limited inclination to pursue morally desirable goals. One may, of course, criticize the human enhancement project by rejecting the assumption that conflict and violence in the international domain should be explained by means of a theory about human nature. In a reply to Savulescu and Persson, Sparrow correctly argues that “structural issues,” rather than human nature, constitute the main factor underlying political conflicts (Sparrow 2014, 29). But he does not explain what exactly these “structural issues” are, as I intend to do later. Sparrow is right in rejecting the human nature theory underlying the human enhancement project. But this underlying assumption, in my view, is not trivially false or simply “ludicrous,” as he suggests. Human nature realism has been implicitly or explicitly endorsed by leading political philosophers ever since Thucydides speculated on the origins of war in antiquity (Freyberg-Inan 2003, 23–36). True, it might be objected that “human nature realism,” as it was defended by Morgenthau and earlier political philosophers, relied upon a metaphysical or psychoanalytical conception of human nature, a conception that, actually, did not have the support of any serious scientific investigation (Smith 1983, 167). Yet, over the last few years there has been much empirical research in fields such as developmental psychology and evolutionary biology that apparently gives some support to the realist claim. Some of these studies suggest that an inclination to aggression and conflict has its origins in our evolutionary history. This idea, then, has recently led some authors to resume “human nature realism” on new foundations, devoid of the metaphysical assumptions of the early realists, and entirely grounded in empirical research. Indeed, some recent works in the field of international relations theory already seek to call attention to evolutionary biology as a possible new start for political realism. This point is clearly made, for instance, by Bradley Thayer, who published in 2004 a book called Darwin and International Relations: On the Evolutionary Origins of War and Ethnic Conflict. And in a paper published in 2000, he affirms the following: Evolutionary theory provides a stronger foundation for realism because it is based on science, not on theology or metaphysics. I use the theory to explain two human traits: egoism and domination. I submit that the egoistic and dominating behavior of individuals, which is commonly described as “realist,” is a product of the evolutionary process. I focus on these two traits because they are critical components of any realist argument in explaining international politics. (Thayer 2000, 125; see also Thayer 2004) Thayer basically argues that a tendency to egoism and domination stems from human evolutionary history. The predominance of conflict and competition in the domain of international politics, he argues, is a reflex of dispositions that can now be proved to be part of our evolved human nature in a way that Morgenthau and other earlier political philosophers could not have established in their own time. Now, what some moral enhancement theorists propose is a direct intervention in our “evolved limited moral psychology” as a means to make us “fit” to cope with some possible devastating consequences from the predominance of conflict and competition in the domain of international politics (Persson and Savulescu 2010, 664). Moral enhancement theorists comprehend the nature of war and conflicts, especially those conflicts that humankind is likely to face in the future, as the result of human beings’ limited moral motivations. Compared to supporters of human nature realism, however, moral enhancement theorists are less skeptical about the prospect of our taming human beings’ proclivity to do evil. For our knowledge in fields such as neurology and pharmacology does already enable us to enhance people’s performance in a variety of activities, and there seems to be no reason to assume it will not enable us to enhance people morally in the future. But the question, of course, is whether moral enhancement will also improve the prospect of our coping successfully with some major threats to the survival of humankind, as Savulescu and Persson propose, or to reduce evil in the world, as proposed by Walker. V. The point to which I would next like to call attention is that “human nature realism” – which is implicitly presupposed by some moral enhancement theorists – has been much criticized over the last decades within the tradition of political realism itself. “Structural realism,” unlike “human nature realism,” does not seek to derive a theory about conflicts and violence in the context of international relations from a theory of the moral shortcomings of human nature. Structural realism was originally proposed by Kenneth Waltz in Man, the State and War, published in 1959, and then later in another book called Theory of International Politics, published in 1979. In both works, Waltz seeks to avoid committing himself to any specific conception of human nature (Waltz 2001, x–xi). Waltz’s thesis is that the thrust of the political realism doctrine can be retained without our having to commit ourselves to any theory about the shortcomings of human nature. What is relevant for our understanding of international politics is, instead, our understanding of the “structure” of the international system of states (Waltz 1986). John Mearsheimer, too, is an important contemporary advocate of political realism. Although he seeks to distance himself from some ideas defended by Waltz, he also rejects human nature realism and, like Waltz, refers to himself as a supporter of “structural realism” (Mearsheimer 2001, 20). One of the basic tenets of political realism (whether “human nature realism” or “structural realism”) is, first, that the states are the main, if not the only, relevant actors in the context of international relations; and second, that states compete for power in the international arena. Moral considerations in international affairs, according to realists, are secondary when set against the state’s primary goal, namely its own security and survival. But while human nature realists such as Morgenthau explain the struggle for power as a result of human beings’ natural inclinations, structural realists like Waltz and Mearsheimer argue that conflicts in the international arena do not stem from human nature, but from the very “structure” of the international system of states (Mearsheimer 2001, 18). According to Waltz and Mearsheimer, it is this structure that compels individuals to act as they do in the domain of international affairs. And one distinguishing feature of the international system of states is its “anarchical structure,” i.e. the lack of a central government analogous to the central governments that exist in the context of domestic politics. It means that each individual state is responsible for its own integrity and survival. In the absence of a superior authority, over and above the power of each sovereign state, political leaders often feel compelled to favor security over morality, even if, all other things being considered, they would naturally be more inclined to trust and to cooperate with political leaders of other states. On the other hand, when political leaders do trust and cooperate with other states, it is not necessarily their benevolent nature that motivates them to be cooperative and trustworthy, but, again, it is the structure of the system of states that compels them. The concept of human nature, as we can see, does not play a decisive role here. Because Waltz and Mearsheimer depart from “human nature realism,” their version of political realism has also sometimes been called “neo-realism” (Booth 1991, 533). Thus, even if human beings turn out to become morally enhanced in the future, humankind may still have to face the same scary scenarios described by some moral enhancement theorists. This is likely to happen if, indeed, human beings remain compelled to cooperate within the present structure of the system of states. Consider, for instance, the incident with a Norwegian weather rocket in January 1995. Russian radars detected a missile that was initially suspected of being on its way to reach Moscow in five minutes. All levels of Russian military defense were immediately put on alert for a possible imminent attack and massive retaliation. It is reported that for the first time in history a Russian president had before him, ready to be used, the “nuclear briefcase” from which the permission to launch nuclear weapons is issued. And that happened when the Cold War was already supposed to be over! In the event, it was realized that the rocket was leaving Russian territory and Boris Yeltsin did not have to enter the history books as the man who started the third world war by mistake (Cirincione 2008, 382).3 But under the crushing pressure of having to decide in such a short time, and on the basis of unreliable information, whether or not to retaliate, even a morally enhanced Yeltsin might have given orders to launch a devastating nuclear response – and that in spite of strong moral dispositions to the contrary. Writing for The Guardian on the basis of recently declassified documents, Rupert Myers reports further incidents similar to the one of 1995. He suggests that as more states strive to acquire nuclear capability, the danger of a major nuclear accident is likely to increase (Myers 2014). What has to be changed, therefore, is not human moral dispositions, but the very structure of the political international system of states within which we currently live. As far as major threats to the survival of humankind are concerned, moral enhancement might play an important role in the future only to the extent that it will help humankind to change the structure of the system of states. While moral enhancement may possibly have desirable results in some areas of human cooperation that do not badly threaten our security – such as donating food, medicine, and money to poorer countries – it will not motivate political leaders to dismantle their nuclear weapons. Neither will it deter other political leaders from pursuing nuclear capability, at any rate not as long as the structure of international politics compels them to see prospective cooperators in the present as possible enemies in the future. The idea of a “structure” should not be understood here in metaphysical terms, as though it mysteriously existed in a transcendent world and had the magical power of determining leaders’ decisions in this world. The word “structure” denotes merely a political arrangement in which there are no powerful law-enforcing institutions. And in the absence of the kind of security that law-enforcing institutions have the force to create, political leaders will often fail to cooperate, and occasionally engage in conflicts and wars, in those areas that are critical to their security and survival. Given the structure of international politics and the basic goal of survival, this is likely to continue to happen, even if, in the future, political leaders become less egoistic and power-seeking through moral enhancement. On the other hand, since the structure of the international system of states is itself another human institution, there is no reason to suppose that it cannot ever be changed. If people become morally enhanced in the future they may possibly feel more strongly motivated to change the structure of the system of states, or perhaps even feel inclined to abolish it altogether. In my view, however, addressing major threats to the survival of humankind in the future by means of bioengineering is unlikely to yield the expected results, so long as moral enhancement is pursued within the present framework of the international system of states.

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#### You must make a choice – China wants to take over the globe

Jacob Stokes, senior policy analyst in the China Program at the U.S. Institute of Peace, 8-14-2020, "The Chinese Military Threat Is Real," Democracy Journal, https://democracyjournal.org/arguments/the-chinese-military-threat-is-real/

Taking seriously the prospect of Chinese aggression does not require viewing Beijing as an avaricious power that is seeking global domination—the CCP is not the Nazis or the Soviets. China’s narrower goals, however, are still dangerous. Beijing defines its sovereign territory expansively to include Taiwan, disputed islands and rocks in the East and South China seas along with the waters themselves, and land on the border with India. Therefore, even “defensive” goals seek to redraw the map, using force if necessary, with major implications for the United States and its alliance commitments, especially with Japan and the Philippines. Xi told former U.S. Defense Secretary James Mattis that China would not compromise on “even one inch” of territory it claims.

Beijing’s implicit long-term goals are also fueling tensions. No one outside of Xi Jinping and his inner circle can know Beijing’s intentions with absolute certainty. Plus, ambitions can expand over time. But a straightforward reading of China’s aspirations based on scouring statements from leaders and official documents includes revising the political and security order in Asia to reduce the role of Washington and its regional alliances, thereby removing the major constraint on Chinese power. In essence, China seeks a tacit dominance in a hierarchical Asia with Beijing at the top. When Xi talks about building an “Asia for Asians” and a “community with a shared future for mankind” that is what he means.

If Xi succeeds, it would mean a region where power tramples rules, where rights are subordinate to Party dictates, and where markets are fixed for favored companies instead of being open and competitive. Beijing seeks to make the world safe for the protection and consolidation of its domestic autocracy. So, a region and world under China’s sway will likely resemble its domestic system. The brazen snuffing out of Hong Kong’s autonomy in violation of Beijing’s treaty obligations, systematic atrocities against the Uighurs and other ethnic minorities in Xinjiang, and universal crackdown on liberties throughout the country give us a preview

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#### No impact to disease

Owen Cotton-Barratt 17, et al, PhD in Pure Mathematics, Oxford, Lecturer in Mathematics at Oxford, Research Associate at the Future of Humanity Institute, 2/3/2017, Existential Risk: Diplomacy and Governance, https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf

For most of human history, natural pandemics have posed the greatest risk of mass global fatalities.37 However, there are some reasons to believe that natural pandemics are very unlikely to cause human extinction. Analysis of the International Union for Conservation of Nature (IUCN) red list database has shown that of the 833 recorded plant and animal species extinctions known to have occurred since 1500, less than 4% (31 species) were ascribed to infectious disease.38 None of the mammals and amphibians on this list were globally dispersed, and other factors aside from infectious disease also contributed to their extinction. It therefore seems that our own species, which is very numerous, globally dispersed, and capable of a rational response to problems, is very unlikely to be killed off by a natural pandemic. One underlying explanation for this is that highly lethal pathogens can kill their hosts before they have a chance to spread, so there is a selective pressure for pathogens not to be highly lethal. Therefore, pathogens are likely to co-evolve with their hosts rather than kill all possible hosts.39

#### Litany of empirics prove decoupling—acid rain, water, sulphur, ozone, deforestation, ag, and renewables.

Phillips 19—(environmental journalist, has written for Nature, the Guardian, the Daily Telegraph, the New Statesman, Businessweek and the EUobserver). Phillips, Leigh. 2019. “The Degrowth Delusion.” openDemocracy. August 30, 2019. <https://www.opendemocracy.net/en/oureconomy/degrowth-delusion/>.

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. 1. The Curious Case of the On-the-Mend Ozone Layer We can see the first major error of the degrowth concept if we turn our attention to past environmental challenges that we have actually overcome. The evidence is clear that it is planning—typically regulation, but also via public-sector infrastructure spending and industrial policy—not reduction in economic growth, that was responsible for these victories. It is worth remembering that we have solved a fair few ecological problems, from acid rain over the Great Lakes to air and water quality in many Western nations. Until the 1980s, sulphur dioxide pollution was tied tightly to economic growth in the OECD club of wealthier nations, but it is no longer. Not enough ecological problems have been solved to be sure, but we need to investigate where there has been success—largely thanks to the struggles of trade unions, impacted communities, and environmental groups—in order to learn the lessons of what works. Where there has been subsequent deterioration after achieving such successes—such as the scandalously still-unresolved lead contamination of water in Flint, Michigan—this has been the result of neoliberal retreat from non-market intervention: privatisation, deregulation, regulatory capture, and underfunding or outsourcing of inspection. In the case of Flint, we can add to this list the neoliberal era's neglect of water infrastructure, particularly with respect to that servicing less-profitable minority and poor communities. Likewise, neoliberal racism that resulted in infrastructural breakdown and underconsumption of water resources by poor and racialised neighbourhoods was responsible for the water crisis in Cape Town, not overconsumption. But perhaps the greatest environmental victory yet has been the healing of the ozone layer. In the 1980s, depletion of atmospheric ozone, particularly around the poles, was that era's version of existential ecological crisis. It was also no less threatening to humanity over the near term than climate change via an increase in skin cancer and immune deficiency disorders as well as negative impacts on terrestrial and near-surface aquatic food webs and biochemical cycles, and reduction in agricultural yields. And the cause was also anthropgenic emissions: this time primarily chlorofluorocarbons (CFCs) that were popularly understood, roughly correctly, as being used in refrigerators and aerosol sprays. Since the 1987 Montreal Protocol ban on ozone-depleting substances, including CFCs, such emissions have declined by 98 percent (there has however been an uptick in unreported emissions since early this decade from east Asia, suggesting someone in the region is cheating). Ozone depletion reversed by the 2000s and full recovery is expected by 2075. Having grown up in the 80s, I remember at the time bugging my mum to stop buying cans of hair spray. She did not follow my advice. Thankfully my advice was not taken by policymakers either. Instead, the Montreal Protocol regulatorily intervened in the market against and over the wails and lobbying efforts of the industries affected. Had we embraced degrowth with respect to ozone depletion by attempting to arrest growth in, say, the number of fridges in the world—or even reduce the total number—instead of regulation to enforce technology-switching, disaster would have befallen us. Saying "this many fridges and no more" would only have arrested the growth in emissions, not emissions tout court. (For the same reason today, it is not enough to keep greenhouse gas emissions steady, but eliminate them) It simply would not have worked in any case, as by what right can developed nations tell the global south that they cannot keep their food fresh while they continue to do so? (Indeed, one might say that the socialist argument is instead: There still are not enough fridges in the world.) Today there are more cans of hair spray and more fridges than ever before. The latter not least in the developing world, where refrigeration enhances quality of life through expansion of the range of food available, reducing food contamination, and improving nutrition. It also reduces food waste and therefore greenhouse gas emissions. There has been an absolute decoupling of growth in the technologies that historically used ozone-depleting substances from growth in ozone depletion. The degrowth position maintains that absolute decoupling of growth from negative environmental impact is impossible, and that only relative decoupling—or reduced resource use per unit of production but increased production overall—is possible, but the story of ozone depletion shows this belief to be false.

Economic growth has been absolutely, not relatively, decoupled from ozone depletion. There are many, many other examples. Europe’s forests have grown by a third over the last century. Timber was used in almost every economic sector around 1900—for fuel, for furniture, house construction, even metal production—meaning that there was little forested areas left on the continent. But technological innovation in agriculture such as motorization, better drainage and irrigation reduced cropland as less area was needed to produce the same volume of food. In addition, there was a mass migration away from rural areas to the cities and, crucially, states after World War Two invested heavily in reforestation. Indeed, once a nation reaches a certain per capital income threshold, net deforestation ceases. Globally, tree cover has increased over the last 35 years. Across the Atlantic, there were more dairy cows in the United States in 1870 than today, when the country has roughly ten times the population, according to the US Department of Agriculture. US crop production has increased even as agricultural inputs such as fertilizer, water and crop acreage have declined or plateaued, with the decline in fertilizer use being particularly sharp. Corn acreage has been absolutely decoupled from corn production. American potato yields continue to increase but the potato market is saturated, so potato production has plateaued, meaning that land is removed from production. Across the agricultural sector, this has meant an area of farmland the size of Washington State has been returned to nature, according to a forthcoming analysis by MIT business scholar Andrew McAfee. McAfee also notes how US consumption of metals marched in lock-step with GDP until about the 1980s. Since then, consumption of important metals such as aluminium, nickel, copper, steel and gold have plateaued or declined. This takes into account imports and exports, so globalization is not the reason for this. One important paper from degrowth advocates argues that this is simply because traded goods have a greater material impact than merely what is incorporated into them (think of the difference between an ingot of steel versus raw iron ore). Once this is taken into account, suggests another paper by a leading degrowth advocate, OECD absolute decoupling reveals itself to be a mirage, and globally economic growth remains as coupled to use of materials as ever—although, interestingly, that same paper notes this is primarily a result of offshoring of just construction materials. But this is a global consideration of material inputs, so a range of sectoral absolute decouplings goes unnoticed, and global ones that are immaterial are likewise ignored. CFC absolute decoupling is global but unrecognized because measurement of material inputs doesn’t capture this. The sharp reduction in emissions of carbon monoxide, sulphur dioxide, nitrogen oxides, lead and particulate in Europe and America has come from regulation; they have not shifted overseas. US agricultural absolute decoupling has likewise not been a product of offshoring, as inputs here are primarily domestically sourced. A global decoupling of greenhouse gas emissions from growth (in principle feasible, but very far from being implemented) likewise would be missed by such an analysis. And even more importantly, the very fact that there has already been a great many demonstrable examples of regional and global absolute decoupling in different sectors disproves the claim of the impossibility of absolute decoupling. The only question that remains is whether absolute decoupling can be extended across all sectors, or sufficient sectors as to eliminate undermining of ecosystem services. Where free-market champions of absolute decoupling like McAfee are wrong however is their explanation for why it happens. McAfee believes it is vicious capitalist competition that drives technological innovation to reduce the costs of inputs. He concedes that some regulation is necessary, but fundamentally it’s market pressures that produce this of their own accord. It is of course great when there is a happy coincidence of profitability and reduction of ecological harm, but if ever there is a conflict between these two, it’s profitability that wins out. And the reality is that America’s Clean Air Act, Clean Water Act and similar regulations across industry—in the face of furious opposition from private companies—have been responsible for most of the major environmental advances in the US. And the story is similar elsewhere. Since 2005, emissions had absolutely decoupled from global beef production, primarily as a result of the Brazilian Workers’ Party’s crackdown on the razing of forest for agricultural production—a magnificent success story currently being disastrously undone by that country’s hard-right government of Jair Bolsonaro. Denmark, a world leader in nitrogen pollution management, has achieved a reduction in fertilizer use even as agricultural output has increased through a muscular state-led nitrogen strategy across the agricultural sector that involves stringent regulation, RD&D funding and infrastructural build-out. One might also respond that technology-switching away from fossil fuels is a much more difficult task than switching away from CFCs or nitrogen recycling. And the response must be that this is certainly true, as this shift affects almost every sector of the economy. But difficult is not the same thing as impossible. Eight major economies—France, Norway, Sweden, Switzerland, Ontario, Quebec, British Columbia and Paraguay—have already either largely or all-but completely decarbonized their electricity grids even as they enjoy economic growth (all by depending primarily on nuclear and/or hydroelectricity). These are models for the world. Cleaning up transport, industry and the built environment will likewise need a muscular public-sector interventionist approach.