indiscriminate economic growth. This idea has understandably inspired a good deal of resistance among more liberal climate watchers, who insist that the task is merely to paint our current growth-based economic model green, so it's worth examining the numbers behind the claim.

It is Kevin Anderson of the Tyndall Centre for Climate Change Research, and one of Britain's top climate experts, who has most forcefully built the case that our growth-based economic logic is now in fundamental conflict with atmospheric limits. Addressing everyone from the U.K. Department for International Development to the Manchester City Council, Anderson has spent more than a decade patiently translating the implications of the latest climate science to politicians, economists, and campaigners. In clear and understandable language, the spiky-haired former mechanical engineer (who used to work in the petrochemical sector) lays out a rigorous road map for cutting our emissions down to a level that provides a decent shot at keeping global temperature rise below 2 degrees Celsius.

But in recent years Anderson's papers and slide shows have become more alarming. Under titles such as "Climate Change: Going Beyond Dangerous … Brutal Numbers and Tenuous Hope," he points out that the chances of staying within anything like safe temperature levels are diminishing fast. With his colleague Alice Bows-Larkin, an atmospheric physicist and climate change mitigation expert at the Tyndall Centre, Anderson argues that we have lost so much time to political stalling and weak climate policies—all while emissions ballooned—that we are now facing cuts so drastic that they challenge the core expansionist logic at the heart of our economic system.[47]

They argue that, if the governments of developed countries want a fifty-fifty chance of hitting the agreed-upon international target of keeping warming below 2 degrees Celsius, and if reductions are to respect any kind of equity principle between rich and poor nations, then wealthy countries need to start cutting their greenhouse gas emissions by something like 8 to 10 percent a year—and they need to start right now. The idea that such deep cuts are required used to be controversial in the mainstream climate community, where the deadlines for steep reductions always seemed to be far off in the future (an 80 percent cut by 2050, for instance). But as emissions have soared and as tipping points loom, that is changing rapidly. Even Yvo de Boer, who held the U.N.'s top climate position until 2009, remarked recently that "the only way" negotiators "can achieve a 2-degree goal is to shut down the whole global economy."[48]

That is a severe overstatement, yet it underlines Anderson and Bows-Larkin's point that we cannot achieve 8 to 10 percent annual cuts with the array of modest carbon-pricing or green tech solutions usually advocated by Big Green. These measures will certainly help, but they are simply not enough. That's because an 8 to 10 percent drop in emissions, year after year, is virtually unprecedented since we started powering our economies with coal. In fact, cuts above 1 percent per year "have historically been associated only with economic recession or upheaval," as the economist Nicholas Stern put it in his 2006 report for the British government.[49]

Even after the Soviet Union collapsed, reductions of this duration and depth did not happen (the former Soviet countries experienced average annual reductions of roughly 5 percent over a period of ten years). Nor did this level of reduction happen beyond a single-year blip after Wall Street crashed in 2008. Only in the immediate aftermath of the great market crash of 1929 did the United States see emissions drop for several consecutive years by more than 10 percent annually, but that was the worst economic crisis of modern times.[50]

If we are to avoid that kind of carnage while meeting our science-based emissions targets, carbon reduction must be managed carefully through what Anderson and Bows-Larkin describe as "radical and immediate de-growth strategies in the US, EU and other wealthy nations."[*51]

Now, I realize that this can all sound apocalyptic—as if reducing emissions requires economic crises that result in mass suffering. But that seems so only because we have an economic system that fetishizes GDP growth above all else, regardless of the human or ecological consequences, while failing to place value on those things that most of us cherish above all—a decent standard of living, a measure of future security, and our relationships with one another. So what Anderson and Bows-Larkin are really saying is that there is still time to avoid catastrophic warming, but not within the rules of capitalism as they are currently constructed. Which is surely the best argument there has ever been for changing those rules.[52]

Rather than pretending that we can solve the climate crisis without rocking the economic boat, Anderson and Bows-Larkin argue, the time has come to tell the truth, to "liberate the science from the economics, finance and astrology, stand by the conclusions however uncomfortable … we need to have the audacity to think differently and conceive of alternative futures."[53]

Interestingly, Anderson says that when he presents his radical findings in climate circles, the core facts are rarely disputed. What he hears most often are confessions

from colleagues that they have simply given up hope of meeting the 2 degree temperature target, precisely because reaching it would require such a profound challenge to economic growth. "This position is shared by many senior scientists and economists advising government," Anderson reports.[54]

In other words, changing the earth's climate in ways that will be chaotic and disastrous is easier to accept than the prospect of changing the fundamental, growth-based, profit-seeking logic of capitalism. We probably shouldn't be surprised that some climate scientists are a little spooked by the radical implications of their own research. Most of them were quietly measuring ice cores, running global climate models, and studying ocean acidification, only to discover, as Australian climate expert and author Clive Hamilton puts it, that in breaking the news of the depth of our collective climate failure, they "were unwittingly destabilizing the political and social order."[55]

Nonetheless, that order has now been destabilized, which means that the rest of us are going to have to quickly figure out how to turn "managed degrowth" into something that looks a lot less like the Great Depression and a lot more like what some innovative economic thinkers have taken to calling "The Great Transition."[56]

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Over the past decade, many boosters of green capitalism have tried to gloss over the clashes between market logic and ecological limits by touting the wonders of green tech, or the "decoupling" of environmental impacts from economic activity. They paint a picture of a world that can continue to function pretty much as it does now, but in which our power will come from renewable energy and all of our various gadgets and vehicles will become so much more energy-efficient that we can consume away without worrying about the impact.

If only humanity's relationship with natural resources was that simple. While it is true that renewable technologies hold tremendous promise to lower emissions, the kinds of measures that would do so on the scale we need involve building vast new electricity grids and transportation systems, often from the ground up. Even if we started construction tomorrow, it would realistically take many years, perhaps decades, before the new systems were up and running. Moreover, since we don't yet have economies powered by clean energy, all that green construction would have to burn a lot of fossil fuels in the interim—a necessary process, but one that wouldn't lower our emissions fast enough. Deep emission cuts in the wealthy nations have to start immediately. That means that if we wait for what

Bows-Larkin describes as the "whiz-bang technologies" to come online "it will be too little too late."[57]

So what to do in the meantime? Well, we do what we can. And what we can do—what doesn't require a technological and infrastructure revolution—is to consume less, right away. Policies based on encouraging people to consume less are far more difficult for our current political class to embrace than policies that are about encouraging people to consume green. Consuming green just means substituting one power source for another, or one model of consumer goods for a more efficient one. The reason we have placed all of our eggs in the green tech and green efficiency basket is precisely because these changes are safely within market logic—indeed, they encourage us to go out and buy more new, efficient, green cars and washing machines.

Consuming less, however, means changing how much energy we actually use: how often we drive, how often we fly, whether our food has to be flown to get to us, whether the goods we buy are built to last or to be replaced in two years, how large our homes are. And these are the sorts of policies that have been neglected so far. For instance, as researchers Rebecca Willis and Nick Eyre argue in a report for the U.K.'s Green Alliance, despite the fact that groceries represent roughly 12 percent of greenhouse gas emissions in Britain, "there is virtually no government policy which is aimed at changing the way we produce, incentivising farmers for low energy farming, or how we consume, incentivising consumption of local and seasonal food." Similarly, "there are incentives to drive more efficient cars, but very little is done to discourage car dependent settlement patterns."[58]

Plenty of people are attempting to change their daily lives in ways that do reduce their consumption. But if these sorts of demand-side emission reductions are to take place on anything like the scale required, they cannot be left to the lifestyle decisions of earnest urbanites who like going to farmers' markets on Saturday afternoons and wearing up-cycled clothing. We will need comprehensive policies and programs that make low-carbon choices easy and convenient for everyone. Most of all, these policies need to be fair, so that the people already struggling to cover the basics are not being asked to make additional sacrifice to offset the excess consumption of the rich. That means cheap public transit and clean light rail accessible to all; affordable, energy-efficient housing along those transit lines; cities planned for high-density living; bike lanes in which riders aren't asked to risk their lives to get to work; land management that discourages sprawl and encourages local, low-energy forms of agriculture; urban design that clusters essential services like schools and health care along transit routes and in

pedestrian-friendly areas; programs that require manufacturers to be responsible for the electronic waste they produce, and to radically reduce built-in redundancies and obsolescences.[*59]

And as hundreds of millions gain access to modern energy for the first time, those who are consuming far more energy than they need would have to consume less. How much less? Climate change deniers like to claim that environmentalists want to return us to the Stone Age. The truth is that if we want to live within ecological limits, we would need to return to a lifestyle similar to the one we had in the 1970s, before consumption levels went crazy in the 1980s. Not exactly the various forms of hardship and deprivation evoked at Heartland conferences. As Kevin Anderson explains: "We need to give newly industrializing countries in the world the space to develop and improve the welfare and well-being of their people. This means more cuts in energy use by the developed world. It also means lifestyle changes which will have most impact on the wealthy.… We've done this in the past. In the 1960s and 1970s we enjoyed a healthy and moderate lifestyle and we need to return to this to keep emissions under control. It is a matter of the well-off 20 percent in a population taking the largest cuts. A more even society might result and we would certainly benefit from a lower carbon and more sustainable way of life."[60]

There is no doubt that these types of policies have countless benefits besides lower emissions. They encourage civic space, physical activity, community building, as well as cleaner air and water. They also do a huge amount to reduce inequality, since it is low-income people, often people of color, who benefit most from improvements in public housing and public transit. And if strong living-wage and hire-local provisions were included in transition plans, they could also benefit most from the jobs building and running those expanded services, while becoming less dependent on jobs in dirty industries that have been disproportionately concentrated in low-income communities of color.

As Phaedra Ellis-Lamkins of the environmental justice organization Green for All puts it, "The tools we use to combat climate change are the same tools we can use to change the game for low-income Americans and people of color.… We need Congress to make the investments necessary to upgrade and repair our crumbling infrastructure—from building seawalls that protect shoreline communities to fixing our storm-water systems. Doing so will create family-sustaining, local jobs. Improving our storm-water infrastructure alone would put 2 million Americans to work. We need to make sure that people of color are a part of the business community and workforce building these new systems."[61]

Another way of thinking about this is that what is needed is a fundamental reordering of the component parts of Gross Domestic Product. GDP is traditionally understood to consist of*consumption* plus *investment* plus *government spending* plus *net exports*. The free market capitalism of the past three decades has put the emphasis particularly on consumption and trade. But as we remake our economies to stay within our global carbon budget, we need to see less consumption (except among the poor), less trade (as we relocalize our economies), and less private investment in producing for excessive consumption. These reductions would be offset by increased government spending, and increased public and private investment in the infrastructure and alternatives needed to reduce our emissions to zero. Implicit in all of this is a great deal more redistribution, so that more of us can live comfortably within the planet's capacity.

Which is precisely why, when climate change deniers claim that global warming is a plot to redistribute wealth, it's not (only) because they are paranoid. It's also because they are paying attention.

Growing the Caring Economy, Shrinking the Careless One

A great deal of thought in recent years has gone into how reducing our use of material resources could be managed in ways that actually improve quality of life overall—what the French call "selective degrowth."[*] Policies like luxury taxes could be put in place to discourage wasteful consumption.[62] The money raised could be used to support those parts of our economies that are already low-carbon and therefore do not need to contract. Obviously a huge number of jobs would be created in the sectors that are part of the green transition—in mass transit, renewable energy, weatherization, and ecosystem restoration. And those sectors that are not governed by the drive for increased yearly profit (the public sector, co-ops, local businesses, nonprofits) would expand their share of overall economic activity, as would those sectors with minimal ecological impact (such as the caregiving professions, which tend to be occupied by women and people of color and therefore underpaid). "Expanding our economies in these directions has all sorts of advantages," Tim Jackson, an economist at the University of Surrey and author of *Prosperity Without Growth*, has written. "In the first place, the time spent by these professions directly improves the quality of our lives. Making them more and more efficient is not, after a certain point, actually desirable. What sense does

it make to ask our teachers to teach ever bigger classes? Our doctors to treat more and more patients per hour?"[63]

There could be other benefits too, like shorter work hours, in part to create more jobs, but also because overworked people have less time to engage in low-consumption activities like gardening and cooking (because they are just too busy). Indeed, a number of researchers have analyzed the very concrete climate benefits of working less. John Stutz, a senior fellow at the Boston-based Tellus Institute, envisions that "hours of paid work and income could converge worldwide at substantially lower levels than is seen in the developed countries today." If countries aimed for somewhere around three to four days a week, introduced gradually over a period of decades, he argues, it could offset much of the emissions growth projected through 2030 while improving quality of life.[64]

Many degrowth and economic justice thinkers also call for the introduction of a basic annual income, a wage given to every person, regardless of income, as a recognition that the system cannot provide jobs for everyone and that it is counterproductive to force people to work in jobs that simply fuel consumption. As Alyssa Battistoni, an editor at the journal*Jacobin*, writes, "While making people work shitty jobs to 'earn' a living has always been spiteful, it's now starting to seem suicidal."[65]

A basic income that discourages shitty work (and wasteful consumption) would also have the benefit of providing much-needed economic security in the front-line communities that are being asked to sacrifice their health so that oil companies can refine tar sands oil or gas companies can drill another fracking well. Nobody wants to have their water contaminated or have their kids suffer from asthma. But desperate people can be counted on to do desperate things—which is why we all have a vested interest in taking care of one another so that many fewer communities are faced with those impossible choices. That means rescuing the idea of a safety net that ensures that everyone has the basics covered: health care, education, food, and clean water. Indeed, fighting inequality on every front and through multiple means must be understood as a central strategy in the battle against climate change.

This kind of carefully planned economy holds out the possibility of much more humane, fulfilling lifestyles than the vast majority of us are experiencing under our current system, which is what makes the idea of a massive social movement coalescing behind such demands a real possibility. But these policies are also the most politically challenging.

Unlike encouraging energy efficiency, the measures we must take to secure a just, equitable, and inspiring transition away from fossil fuels clash directly with our reigning economic orthodoxy at every level. As we will see, such a shift breaks all the ideological rules—it requires visionary long-term planning, tough regulation of business, higher levels of taxation for the affluent, big public sector expenditure, and in many cases reversals of core privatizations in order to give communities the power to make the changes they desire. In short, it means changing everything about how we think about the economy so that our pollution doesn't change everything about our physical world.

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[*] China has of course emerged as the world's dominant supplier of inexpensive modules, and in that role has helped to drive dramatic drops in solar prices. It has also flooded the market with cheap panels in recent years, contributing to a global oversupply that has outpaced demand.

[*] And they don't let developing countries like China and India off the hook. According to their projections, developing countries can have just one more decade to continue to increase their emissions to aid their efforts to pull themselves out of poverty while switching over to green energy sources. By 2025, they would need to be cutting emissions "at an unprecedented 7 per cent" a year as well.

[*] A law passed by the European Parliament that would require that all cell phone manufacturers offer a common battery charger is a small step in the right direction. Similarly, requiring that electronics manufacturers use recycled metals like copper could save a great many communities from one of the most toxic mining processes in the world.

[*] In French, "decroissance" has the double meaning of challenging both growth, *croissance*, and *croire*, to believe—invoking the idea of choosing not to believe in the fiction of perpetual growth on a finite planet.

3

PUBLIC AND PAID FOR

Overcoming the Ideological Blocks to the Next Economy

"We have no option but to reinvent mobility … much of India still takes the bus, walks or cycles—in many cities as much as 20 percent of the population bikes. We do this because we are poor. Now the challenge is to reinvent city planning so that we can do this as we become rich."

—Sunita Narain, director general, Centre for Science and Environment, 2013[1]

"The lady in the Rolls-Royce car is more damaging to morale than a fleet of Göring's bombing-planes."

–George Orwell, *The Lion and the Unicorn,* 1941[2]

It was a tight vote but on September 22, 2013, residents of Germany's second largest city decided to take their power back. On that day, 50.9 percent of Hamburg's voters cast their ballots in favor of putting their electricity, gas, and heating grids under the control of the city, reversing a wave of corporate sell-offs that took place over a decade earlier.[3]

It's a process that has been given a few clunky names, including "re-municipalization" and "re-communalization." But the people involved tend to simply refer to their desire for "local power."

The Our Hamburg–Our Grid coalition made a series of persuasive arguments in favor of taking back the utilities. A locally controlled energy system would be concerned with public interests, not profits. Residents would have greater democratic say in their energy system, they argued, rather than having the decisions that affect them made in distant boardrooms. Andmoney earned in the sale of energy would be returned to the city, rather than lost to the shareholders of multinationals that had control over the grids at the time—a definite plus during a

time of relentless public austerity. "For people it's self-evident that goods on which everybody is dependent should belong to the public," campaign organizer Wiebke Hansen explained in an interview.[4]

There was something else driving the campaign as well. Many of Hamburg's residents wanted to be part of *Energiewende*: the fast-spreading transition to green, renewable energy that was sweeping the country, with nearly 25 percent of Germany's electricity in 2013 coming from renewables, dominated by wind and solar but also including some biogas and hydro—up from around 6 percent in 2000. In comparison, wind and solar made up just 4 percent of total U.S. electricity generation in 2013. The cities of Frankfurt and Munich, which had never sold off their energy grids, had already joined the transition and pledged to move to 100 percent renewable energy by 2050 and 2025, respectively. But Hamburg and Berlin, which had both gone the privatization route, were lagging behind. And this was a central argument for proponents of taking back Hamburg's grid: it would allow them to get off coal and nuclear and go green.[5]

Much has been written about Germany's renewable energy transition—particularly the speed at which it is being achieved, as well as the ambition of its future targets (the country is aiming for 55–60 percent renewables by 2035).[6] The weaknesses of the program have also been hotly debated, particularly the question of whether the decision to phase out nuclear energy has led to a resurgence of coal (more on that next chapter).

In all of this analysis, however, scarce attention has been paid to one key factor that has made possible what may be the world's most rapid shift to wind and solar power: the fact that in hundreds of cities and towns across the country, citizens have voted to take their energy grids back from the private corporations that purchased them. As Anna Leidreiter, a climate campaigner with the World Future Council, observed after the Hamburg vote, "This marks a clear reversal to the neoliberal policies of the 1990s, when large numbers of German municipalities sold their public services to large corporations as money was needed to prop up city budgets."[7]

Nor is this some small trend. According to a Bloomberg report, "More than 70 new municipal utilities have started up since 2007, and public operators have taken over more than 200 concessions to run energy grids from private companies in that time." And though there are no national statistics, the German Association of Local Utilities believes many more cities and towns than that have taken back control over their grids from outside corporations.[8]

Most surprising has been the force with which large parts of the German public have turned against energy privatization. In 2013 in Berlin *83 percent* of participating voters cast their ballots in favor of switching to a publicly owned power utility based eventually on 100 percent renewable energy. Not enough people turned out to vote for the decision to be binding (though the campaign came very close), but the referendum made public opinion so clear that campaigners are still pushing for a nonprofit cooperative to take over the grid when the current contract ends.[9]

Energy privatization reversals—linked specifically to a desire for renewable energy—have started to spread beyond Germany in recent years, including to the United States. For instance, in the mid-2000s, residents and local officials in the liberal city of Boulder, Colorado, began lobbying their privatized power utility to move away from coal and toward renewable energy. The company, the Minneapolis-based Xcel Energy, wasn't particularly interested, so a coalition of environmentalists and an energetic youth group called New Era Colorado came to the same conclusion as the voters in Germany: they had to take their grid back. Steve Fenberg of New Era explains, "We have one of the most carbon-intensive energy supplies in the country, and [Boulder] is an environmentally minded community, and we wanted to change that. We realized that we had no control over that unless we controlled the energy supply."[10]

In 2011, despite being outspent by Xcel by ten to one, the pro-renewables coalition narrowly won two ballot measures that called on the city of Boulder to consider buying back its power system.[11] The vote did not immediately put the power utility under public control, but it gave the city the authority and financing to seriously consider the option (which it is currently doing). The coalition won another crucial vote in 2013 against an Xcel-supported initiative that would have blocked the formation of a new public utility, this time by a wide majority.

These were historic votes: other cities had reversed earlier privatizations because they were unhappy with the quality of the service or the pricing under the private operator. But this was the first time a U.S. city was taking these steps "for the sole purpose of reducing its impact on the planet," according to Tim Hillman, a Boulder-based environmental engineer. Indeed the pro–public forces had put fighting climate change front and center in their campaigns, accusing Xcel of being just another fossil fuel company standing in the way of much needed climate action. And according to Fenberg, their vision reaches beyond Boulder. "We want to show the world that you can actually power a city responsibly and not pay a lot

for it," he now says. "We want this to be a model, not just do this one cool thing for ourselves in our community."[12]

What stands out about Boulder's experience is that, unlike some of the German campaigns, it did not begin with opposition to privatization. Boulder's local power movement began with the desire to switch to clean energy, regardless of who was providing it. Yet in the process of trying to achieve that goal, these residents discovered that they had no choice but to knock down one of the core ideological pillars of the free market era: that privately run services are always superior to public ones. It was an accidental discovery very similar to the one Ontario residents made when it became clear that their green energy transition was being undermined by free trade commitments signed long ago.

Though rarely mentioned in climate policy discussions, there is a clear and compelling relationship between public ownership and the ability of communities to get off dirty energy. Many of the countries with the highest commitments to renewable energy are ones that have managed to keep large parts of their electricity sectors in public (and often local) hands, including the Netherlands, Austria, and Norway. In the U.S., some of the cities that have set the most ambitious green energy targets also happen to have public utilities. Austin, Texas, for instance, is ahead of schedule for meeting its target of 35 percent renewable power by 2020, and Sacramento, California's, utility is gearing up to beat a similar target and has set a pioneering goal of reducing emissions by 90 percent by mid-century. On the other hand, according to John Farrell, senior researcher at the Minneapolis-based Institute for Local Self-Reliance, the attitude of most private players has been, "we're going to take the money that we make from selling fossil fuels, and use it to lobby as hard as we can against any change to the way that we do business."[13]

This does not mean that private power monopolies will not offer their customers the option of purchasing power from renewables as part of a mix that includes fossil fuels: many do offer that choice, usually at a premium price. And some offer renewable power exclusively, though this is invariably from large-scale hydropower. Nor is it the case that public power will always willingly go green—there are plenty of publicly owned power utilities that remain hooked on coal and are highly resistant to change.

However, many communities are discovering that while public utilities often need to be pressured hard to make emission reductions a priority (a process that may require fundamental reform to make them more democratic and accountable to their constituents) private energy monopolies offer no such option. Answerable chiefly to their shareholders and driven by the need for high quarterly profits,

private companies will voluntarily embrace renewables only if it won't impact their earnings or if they are forced to by law. If renewables are seen as less profitable, at least in the short term, these bottom-line companies simply won't make the switch. Which is why, as German antinuclear activist Ralf Gauger puts it, more and more people are coming to the conclusion that, "Energy supply and environmental issues should not be left in the hands of private for-profit interests."[14]

This does not mean that the private sector should be excluded from a transition to renewables: solar and wind companies are already bringing clean energy to many millions of consumers around the world, including through innovative leasing models that allow customers to avoid the up-front costs of purchasing their own rooftop solar panels. But despite these recent successes, the market has proved extremely volatile and according to projections from the International Energy Agency, investment levels in clean energy need to quadruple by 2030 if we are to meet emission targets aimed at staying below 2 degrees Celsius of warming.[15]

It's easy to mistake a thriving private market in green energy for a credible climate action plan, but, though related, they are not the same thing. It's entirely possible to have a booming market in renewables, with a whole new generation of solar and wind entrepreneurs growing very wealthy—and for our countries to still fall far short of lowering emissions in line with science in the brief time we have left. To be sure of hitting those tough targets, we need systems that are more reliable than boom-and-bust private markets. And as a 2013 paper produced by a research team at the University of Greenwich explains, "Historically, the private sector has played little role in investing in renewable energy generation. Governments have been responsible for nearly all such investments. Current experience from around the world, including the markets of Europe, also shows that private companies and electricity markets cannot deliver investments in renewables on the scale required."[16]

Citing various instances of governments turning to the public sector to drive their transitions (including the German experience), as well as examples of large corporate-driven renewable projects that were abandoned by their investors midstream, the Greenwich research team concludes, "An active role for government and public sector utilities is thus a far more important condition for developing renewable energy than any expensive system of public subsidies for markets or private investors."[17]

Sorting out what mechanisms have the best chance of pulling off a dramatic and enormously high-stakes energy transition has become particularly pressing of late.

That's because it is now clear that—at least from a technical perspective—it is entirely possible to rapidly switch our energy systems to 100 percent renewables. In 2009, Mark Z. Jacobson, a professor of civil and environmental engineering at Stanford University, and Mark A. Delucchi, a research scientist at the Institute of Transportation Studies at the University of California, Davis, authored a groundbreaking, detailed road map for "how 100 percent of the world's energy, for *all* purposes, could be supplied by wind, water and solar resources, by as early as 2030." The plan includes not only power generation but also transportation as well as heating and cooling. Later published in the journal*Energy Policy*, the road map is one of several credible studies that have come out in recent years that show how wealthy countries and regions can shift all, or almost all, of their energy infrastructure to renewables within a twenty-to-forty-year time frame.[18] Those studies demonstrating the potential for rapid progress include:

- In Australia, the University of Melbourne's Energy Institute and the nonprofit Beyond Zero Emissions have published a blueprint for achieving a 60 percent solar and 40 percent wind electricity system in an astonishing ten years.[19]
- By 2014, the U.S. National Oceanic and Atmospheric Administration (NOAA) had concluded from its own extensive research into weather patterns that cost-effective wind and solar could constitute nearly 60 percent of the U.S. electricity system by 2030.[20]
- Among more conservative projections, a major 2012 study by the U.S. Department of Energy's National Renewable Energy Laboratory argues that wind, solar, and other currently available green technologies could meet 80 percent of Americans' electricity needs by 2050.[21]

Most promising of all is new work by a team of researchers at Stanford, led by Mark Jacobson (who coauthored the 2009 global plan). In March 2013, they published a study in *Energy Policy* showing that New York state could meet all of its power needs with renewables by 2030. Jacobson and his colleagues are developing similar plans for every U.S. state, and have already published numbers for the country as a whole. "It's absolutely not true that we need natural gas, coal or oil—we think it's a myth," he told *The New York Times*.[22]

"This really involves a large scale transformation," he says. "It would require an effort comparable to the Apollo moon project or constructing the interstate highway system. But it is possible, without even having to go to new technologies. We really need to just decide collectively that this is the direction we want to head as a society." And he is clear on what stands in the way: "The biggest obstacles are social and political—what you need is the will to do it."[23]

In fact it takes more than will: it requires the profound ideological shift already discussed. Because our governments have changed dramatically since the days when ambitious national projects were conceived and implemented. And the imperatives created by the climate crisis are colliding with the dominant logic of our time on many other fronts.

Indeed every time a new, record-breaking natural disaster fills our screens with human horror, we have more reminders of how climate change demands that we invest in the publicly owned bones of our societies, made brittle by decades of neglect.

Rebuilding, and Reinventing, the Public Sphere

When I first spotted Nastaran Mohit, she was bundled in a long puffy black coat, a white toque pulled halfway over her eyes, barking orders to volunteers gathered in an unheated warehouse. "Take a sticky pad and write down what the needs are," the fast-talking thirty-year-old was telling a group newly designated as Team 1. "Okay, head on out. Who is Team 2?"[24]

It was ten days after Superstorm Sandy made landfall and we were in one of the hardest-hit neighborhoods in the Rockaways, a long, narrow strip of seaside communities in Queens, New York. The storm waters had receded but hundreds of basements were still flooded and power and cell phone service were still out. The National Guard patrolled the streets in trucks and Humvees, making sure curfew was observed, but when it came to offering help to those stranded in the cold and dark, the state and the big aid agencies were largely missing in action. (Or, more accurately, they were at the other, wealthier end of the Rockaway peninsula, where these organizations and agencies were a strong and helpful presence.)[25]

Seeing this abandonment, thousands of mostly young volunteers had organized themselves under the banner "Occupy Sandy" (many were veterans of Occupy Wall Street) and were distributing clothes, blankets, and hot food to residents of neglected areas. They set up recovery hubs in community centers and churches, and went door-to-door in the area's notorious, towering brick housing projects, some as high as twenty-three stories. "Muck" had become a ubiquitous verb, as in "Do you need us to come muck out your basement?" If the answer was yes, a team of eager twenty-somethings would show up on the doorstep with mops, gloves, shovels, and bleach, ready to get the job done.

Mohit had arrived in the Rockaways to help distribute basic supplies but quickly noticed a more pressing need: in some areas, absolutely no one was providing health care. And the need was so great, it scared her. Since the 1950s, the Rockaways—once a desirable resort destination—had become a dumping ground for New York's poor and unwanted: welfare recipients, the elderly, discharged mental patients. They were crammed into high-rises, many in a part of the peninsula known locally as the "Baghdad of Queens."[26]

As in so many places like it, public services in the Rockaways had been cut to the bone, and then cut some more. Just six months before the storm, Peninsula Hospital Center—one of only two hospitals in the area, which served a low-income and elderly population—had shut down after the state Department of Health refused to step in. Walk-in clinics had attempted to fill the gap but they had flooded during the storm and, along with the pharmacies, had not yet reopened. "This is just a dead-zone," Mohit sighed.[27]

So she and friends in Occupy Sandy called all the doctors and nurses they knew and asked them to bring in whatever supplies they could. Next, they convinced the owner of an old furrier, damaged in the storm, to let them convert his storefront on the neighborhood's main drag into a makeshift MASH unit. There, amidst the animal pelts hanging from the ceiling, volunteer doctors and nurses began to see patients, treat wounds, write prescriptions, and provide trauma counseling.

There was no shortage of patients; in its first two weeks, Mohit estimated that the clinic helped hundreds of people. But on the day I visited, worries were mounting about the people still stuck in the high-rises. As volunteers went door-to-door distributing supplies in the darkened projects, flashlights strapped to their foreheads, they were finding alarming numbers of sick people. Cancer and HIV/AIDS meds had run out, oxygen tanks were empty, diabetics were out of insulin, and addicts were in withdrawal. Some people were too sick to brave the dark stairwells and multiple flights of stairs to get help; some didn't leave because they had nowhere to go and no way to get off the peninsula (subways and buses were not operating); others feared that if they left their apartments, their homes would be burglarized. And without cell service or power for their TVs, many had no idea what was going on outside.

Most shockingly, residents reported that until Occupy Sandy showed up, no one had knocked on their doors since the storm. Not from the Health Department, nor the city Housing Authority (responsible for running the projects), nor the big relief agencies like the Red Cross. "I was like 'Holy crap,' "Mohit told me. "There was just no medical attention at all."[*28] Referring to the legendary abandonment of New

Orleans's poor residents when the city flooded in 2005, she said: "This is Katrina 2.0."[29]

The most frustrating part was that even when a pressing health need was identified, and even when the volunteer doctors wrote the required prescriptions, "we bring it to the pharmacy and the pharmacy is sending it back to us because they need insurance information. And then we get as much information as we can and we bring it back and they say, 'Now we need their Social Security number.' "[30]

According to a 2009 Harvard Medical School study, as many as 45,000 people die annually in the United States because they lack health insurance. As one of the study's coauthors pointed out, this works out to about one death every twelve minutes. It's unclear how President Obama's stunted 2010 health care law will change those numbers, but watching the insurance companies continue to put money before human health in the midst of the worst storm in New York's history cast this preexisting injustice in a new, more urgent light. "We need universal health care," Mohit declared. "There is no other way around it. There is absolutely no other way around it." Anyone who disagreed should come to the disaster zone, she said, because this "is a perfect situation for people to really examine how nonsensical, inhumane, and barbaric this system is."[31]

The word "apocalypse" derives from the Greek *apokalypsis*, which means "something uncovered" or revealed. Besides the need for a dramatically better health care system, there was much else uncovered and revealed when the floodwaters retreated in New York that October. The disaster revealed how dangerous it is to be dependent on centralized forms of energy that can be knocked out in one blow. It revealed the life-and-death cost of social isolation, since it was the people who did not know their neighbors, or who were frightened of them, who were most at risk. Meanwhile, it was the tightest-knit communities, where neighbors took responsibility for one another's safety, that were best able to literally weather the storm.

The disaster also revealed the huge risks that come with deep inequality, since the people who were already the most vulnerable—undocumented workers, the formerly incarcerated, people in public housing—suffered most and longest. In low-income neighborhoods, homes filled not only with water but with heavy chemicals and detergents—the legacy of systemic environmental racism that allowed toxic industries to build in areas inhabited mostly by people of color. Public housing projects that had been left to decay—while the city bided its time before selling them off to developers—turned into death traps, their ancient plumbing and electrical systems giving way completely. As Aria Doe, executive

director of the Action Center for Education and Community Development in the Rockaways, put it, the peninsula's poorest residents "were six feet under" before the storm even hit. "Right now, they're seven or eight feet under."[32]

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All around the world, the hard realities of a warming world are crashing up against the brutal logic of austerity, revealing just how untenable it is to starve the public sphere at the very moment we need it most. The floods that hit the U.K. in the winter of 2013–2014, for instance, would have been trying for any government: thousands of homes and workplaces were inundated, hundreds of thousands of houses and other buildings lost power, farmland was submerged, several rail lines were down for weeks, all combining to create what one top official called an "almost unparalleled natural disaster." This as the country was still reeling from a previous devastating storm that had struck just two months before.[33]

But the floods were particularly awkward for the coalition government led by Conservative prime minister David Cameron because, in the three years prior, it had gutted the Environment Agency (EA), which was responsible for dealing with flooding. Since 2009, at least 1,150 jobs had been lost at the agency, with as many as 1,700 more on the chopping block, adding up to approximately a quarter of its total workforce. In 2012 *The Guardian* had revealed that "nearly 300 flood defence schemes across England [had] been left unbuilt due to government budget cuts." The head of the Environment Agency had stated plainly during the most recent round of cuts that "Flood risk maintenance will be impacted."[34]

Cameron is no climate change denier, which is what made it all the more incredible that he had hobbled the agency responsible for protecting the public from rising waters and more ferocious storms, two well-understood impacts of climate change. And his praise of the good works of the staff that had survived his axe provided cold comfort. "It is a disgrace that the Government is happy to put cost cutting before public safety and protecting family homes," announced the trade union representing EA workers in a scathing statement. "They can't have it both ways, praising the sterling work of members in the Agency in one breath, and in the next breath announcing further damaging cuts."[35]

During good times, it's easy to deride "big government" and talk about the inevitability of cutbacks. But during disasters, most everyone loses their free market religion and wants to know that their government has their backs. And if there is one thing we can be sure of, it's that extreme weather events like Superstorm Sandy, Typhoon Haiyan in the Philippines, and the British floods—

disasters that, combined, pummeled coastlines beyond recognition, ravaged millions of homes, and killed many thousands—are going to keep coming.

Over the course of the 1970s, there were 660 reported disasters around the world, including droughts, floods, extreme temperature events, wildfires, and storms. In the 2000s, there were 3,322—a fivefold boost. That is a staggering increase in just over thirty years, and clearly global warming cannot be said to have "caused" all of it. But the climate signal is also clear. "There's no question that climate change has increased the frequency of certain types of extreme weather events," climate scientist Michael Mann told me in an interview, "including drought, intense hurricanes, and super typhoons, the frequency and intensity and duration of heat waves, and potentially other types of extreme weather though the details are still being debated within the scientific community."[36]

Yet these are the same three decades in which almost every government in the world has been steadily chipping away at the health and resilience of the public sphere. And it is this neglect that, over and over again, turns natural disasters into unnatural catastrophes. Storms burst through neglected levees. Heavy rain causes decrepit sewer systems to back up and overflow. Wildfires rage out of control for lack of workers and equipment to fight them (in Greece, fire departments can't afford spare tires for their trucks driving into forest blazes). Emergency responders are missing in action for days after a major hurricane. Bridges and tunnels, left in a state of disrepair, collapse under the added pressure.

The costs of coping with increasing weather extremes are astronomical. In the United States, each major disaster seems to cost taxpayers upward of a billion dollars. The cost of Superstorm Sandy is estimated at $65 billion. And that was just one year after Hurricane Irene caused around $10 billion in damage, just one episode in a year that saw fourteen billion-dollar disasters in the U.S. alone. Globally, 2011 holds the title as the costliest year ever for disasters, with total damages reaching at least $380 billion. And with policymakers still locked in the vise grip of austerity logic, these rising emergency expenditures are being offset with cuts to everyday public spending, which will make societies even more vulnerable during the next disaster—a classic vicious cycle.[37]

It was never a good idea to neglect the foundations of our societies in this way. In the context of climate change, however, that decision looks suicidal. There are many important debates to be had about the best way to respond to climate change—storm walls or ecosystem restoration? Decentralized renewables, industrial scale wind power combined with natural gas, or nuclear power? Small-scale organic farms or industrial food systems? There is, however, *no* scenario in

which we can avoid wartime levels of spending in the public sector—not if we are serious about preventing catastrophic levels of warming, and minimizing the destructive potential of the coming storms.

It's no mystery where that public money needs to be spent. Much of it should go to the kinds of ambitious emission-reducing projects already discussed—the smart grids, the light rail, the citywide composting systems, the building retrofits, the visionary transit systems, the urban redesigns to keep us from spending half our lives in traffic jams. The private sector is ill suited to taking on most of these large infrastructure investments: if the services are to be accessible, which they must be in order to be effective, the profit margins that attract private players simply aren't there.

Transit is a good example. In March 2014, when air pollution in French cities reached dangerously high levels, officials in Paris made a snap decision to discourage car use by making public transit free for three days. Obviously private operators would strenuously resist such measures. And yet by all rights, our transit systems should be responding with the same kind of urgency to dangerously high levels of atmospheric carbon. Rather than allowing subway and bus fares to rise while service erodes, we need to be lowering prices and expanding services—regardless of the costs.

Public dollars also need to go to the equally important, though less glamorous projects and services that will help us prepare for the coming heavy weather. That includes things like hiring more firefighters and improving storm barriers. And it means coming up with new, nonprofit disaster insurance programs so that people who have lost everything to a hurricane or a forest fire are not left at the mercy of a private insurance industry that is already adapting to climate change by avoiding payouts and slapping victims with massive rate increases. According to Amy Bach, cofounder of the San Francisco–based advocacy group United Policyholders, disaster insurance is becoming "very much like health insurance. We're going to have to increasingly take the profit motive out of the system so that it operates efficiently and effectively, but without generating obscene executive salaries and bonuses and shareholder returns. Because it's not going to be a sustainable model. A publicly traded insurance company in the face of climate change is not a sustainable business model for the end user, the consumer."[38] It's that or a disaster capitalism free-for-all; those are the choices.

These types of improvements are of course in far greater demand in developing countries like the Philippines, Kenya, and Bangladesh that are already facing some of the most severe climate impacts. Hundreds of billions of dollars are urgently

needed to build seawalls; storage and distribution networks for food, water, and medicine; early warning systems and shelters for hurricanes, cyclones, and tsunamis—as well as public health systems able to cope with increases in climate-related diseases like malaria.[39] Though mechanisms to protect against government corruption are needed, these countries should not have to spend their health care and education budgets on costly disaster insurance plans purchased from transnational corporations, as is happening right now. Their people should be receiving direct compensation from the countries (and companies) most responsible for warming the planet.

The Polluter Pays

About now a sensible reader would be asking: how on earth are we going to pay for all this? It's the essential question. A 2011 survey by the U.N. Department of Economic and Social Affairs looked at how much it would cost for humanity to "overcome poverty, increase food production to eradicate hunger without degrading land and water resources, and avert the climate change catastrophe." The price tag was $1.9 trillion a year for the next forty years—and "at least one half of the required investments would have to be realized in developing countries."[40]

As we all know, public spending is going in the opposite direction almost everywhere except for a handful of fast-growing so-called emerging economies. In North America and Europe, the economic crisis that began in 2008 is still being used as a pretext to slash aid abroad and cut climate programs at home. All over Southern Europe, environmental policies and regulations have been clawed back, most tragically in Spain, which, facing fierce austerity pressure, drastically cut subsidies for renewables projects, sending solar projects and wind farms spiraling toward default and closure. The U.K. under David Cameron has also cut supports for renewable energy.

So if we accept that governments are broke, and they're not likely to introduce "quantitative easing" (aka printing money) for the climate system as they have for the banks, where is the money supposed to come from? Since we have only a few short years to dramatically lower our emissions, the only rational way forward is to fully embrace the principle already well established in Western law: the polluter pays.

The fossil fuel companies have known for decades that their core product was warming the planet, and yet they have not only failed to adapt to that reality, they have actively blocked progress at every turn. Meanwhile, oil and gas companies remain some of the most profitable corporations in history, with the top five oil companies pulling in $900 billion in profits from 2001 to 2010. ExxonMobil still holds the record for the highest corporate profits ever reported in the United States, earning $41 billion in 2011 and $45 billion in 2012. These companies are rich, quite simply, because they have dumped the cost of cleaning up their mess onto regular people around the world. It is this situation that, most fundamentally, needs to change.[41]

And it will not change without strong action. For well over a decade, several of the oil majors have claimed to be voluntarily using their profits to invest in a shift to renewable energy. In 2000, BP rebranded itself "Beyond Petroleum" and even changed its logo to a sunburst, called "the Helios mark after the sun god of ancient Greece." ("We are not an oil company," then-chief executive Sir John Browne said at the time, explaining that, "We are aware the world wants less carbon-intensive fuels. What we want to do is create options.") Chevron, for its part, ran a high-profile advertising campaign declaring, "It's time oil companies get behind renewables.… We agree." But according to a study by the Center for American Progress, just 4 percent of the Big Five's $100 billion in combined profits in 2008 went to "renewable and alternative energy ventures." Instead, they continue to pour their profits into shareholder pockets, outrageous executive pay (Exxon CEO Rex Tillerson makes more than $100,000 a day), and new technologies designed to extract even dirtier and more dangerous fossil fuels.[42]

And even as the demand for renewables increases, the percentage the fossil fuel companies spend on them keeps shrinking—by 2011, most of the majors were spending less than 1 percent of their overall expenditures on alternative energy, with Chevron and Shell spending a deeply unimpressive 2.5 percent. In 2014, Chevron pulled back even further. According to *Bloomberg Businessweek*, the staff of a renewables division that had almost doubled its target profits was told "that funding for the effort would dry up" and was urged "to find jobs elsewhere." Chevron also moved to sell off businesses that had developed green projects for governments and school districts.As oil industry watcher Antonia Juhasz has observed, "You wouldn't know it from their advertising, but the world's major oil companies have either entirely divested from alternative energy or significantly reduced their investments in favor of doubling down on ever-more risky and destructive sources of oil and natural gas."[43]

Given this track record, it's safe to assume that if fossil fuel companies are going to help pay for the shift to renewable energy, and for the broader costs of a climate destabilized by their pollution, it will be because they are forced to do so by law. Just as tobacco companies have been obliged to pay the costs of helping people to quit smoking, and BP has had to pay for much of the cleanup of its oil spill in the Gulf of Mexico, it is high time for the industry to at least split the bill for the climate crisis. And there is mounting evidence that the financial world understands that this is coming. In its 2013 annual report on "Global Risks," the World Economic Forum (host of the annual superelite gathering in Davos), stated plainly, "Although the Alaskan village of Kivalina—which faces being 'wiped out' by the changing climate—was unsuccessful in its attempts to file a US$ 400 million lawsuit against oil and coal companies, future plaintiffs may be more successful. Five decades ago, the U.S. tobacco industry would not have suspected that in 1997 it would agree to pay $368 billion in health-related damages." But it did.[44]

The question is: how do we stop fossil fuel profits from continuing to hemorrhage into executive paychecks and shareholder pockets—and how do we do it soon, before the companies are significantly less profitable or out of business because we have moved to a new energy system? As the Global Risks report suggests, communities severely impacted by climate change have made several attempts to use the courts to sue for damages, but so far they have been unsuccessful. A steep carbon tax would be a straightforward way to get a piece of the profits, as long as it contained a generous redistributive mechanism—a tax cut or income credit—that compensated poor and middle-class consumers for increased fuel and heating prices. As Canadian economist Marc Lee points out, designed properly, "It is possible to have a progressive carbon tax system that reduces inequality as it raises the price of emitting greenhouse gases."[45] An even more direct route to getting a piece of those pollution profits would be for governments to negotiate much higher royalty rates on oil, gas, and coal extraction, with the revenues going to "heritage trust funds" that would be dedicated to building the post–fossil fuel future, as well as to helping communities and workers adapt to these new realities.

Fossil fuel corporations can be counted on to resist any new rules that cut into their profits, so harsh penalties, including revoking corporate charters, would need to be on the table. Companies would threaten to pull out of certain operations, to be sure, but once a multinational like Shell has spent billions to build the mines and drilling platforms needed to extract fossil fuels, it is unlikely to abandon that

infrastructure because royalties go up. (Though it will bitterly complain and may well seek damages at an investment tribunal.)

But the extractive industries shouldn't be the only targets of the "polluter pays" principle. The U.S. military is by some accounts the largest single consumer of petroleum in the world. In 2011, the Department of Defense released, at minimum, 56.6 million metric tons of CO_2 equivalent into the atmosphere, more than the U.S.-based operations of ExxonMobil and Shell combined.[46] So surely the arms companies should pay their share. The car companies have plenty to answer for too, as do the shipping industry and the airlines.

Moreover, there is a simple, direct correlation between wealth and emissions—more money generally means more flying, driving, boating, and powering of multiple homes. One case study of German consumers indicates that the travel habits of the most affluent class have an impact on climate 250 percent greater than that of their lowest-earning neighbors.[47]

That means any attempt to tax the extraordinary concentration of wealth at the very top of the economic pyramid, as documented so persuasively by Thomas Piketty among many others, would—if partially channeled into climate financing—effectively make the polluters pay. As journalist and climate and energy policy expert Gar Lipow puts it, "We should tax the rich more because it is the fair thing to do, and because it will provide a better life for most of us, and a more prosperous economy. However, providing money to save civilization and reduce the risk of human extinction is another good reason to bill the rich for their fair share of taxes." But it must be said that a "polluter pays" principle would have to reach beyond the super rich. According to Stephen Pacala, director of the Princeton Environmental Institute and codirector of Princeton's Carbon Mitigation Initiative, the roughly 500 million richest of us on the planet are responsible for about half of all global emissions. That would include the rich in every country in the world, notably in countries like China and India, as well significant parts of the middle classes in North America and Europe.[*48]

Taken together, there is no shortage of options for equitably coming up with the cash to prepare for the coming storms while radically lowering our emissions to prevent catastrophic warming.

Consider the following list, by no means complete:

- A "low-rate" financial transaction tax—which would hit trades of stocks, derivatives, and other financial instruments—could bring in nearly $650 billion at the global level each year, according to a 2011 resolution of the European

Parliament (and it would have the added bonus of slowing down financial speculation).[49]

- Closing tax havens would yield another windfall. The U.K.-based Tax Justice Network estimates that in 2010, the private financial wealth of individuals stowed unreported in tax havens around the globe was somewhere between $21 trillion and $32 trillion. If that money were brought into the light and its earnings taxed at a 30 percent rate, it would yield at least $190 billion in income tax revenue each year.[50]
- A 1 percent "billionaire's tax," floated by the U.N., could raise $46 billion annually.[51]
- Slashing the military budgets of each of the top ten military spenders by 25 percent could free up another $325 billion, using 2012 numbers reported by the Stockholm International Peace Research Institute. (Granted, probably the toughest sell of all, particularly in the U.S.)[52]
- A $50 tax per metric ton of CO_2 emitted in developed countries would raise an estimated $450 billion annually, while a more modest $25 carbon tax would still yield $250 billion per year, according to a 2011 report by the World Bank, the International Monetary Fund, and the Organisation for Economic Co-operation and Development (OECD), among others.[53]
- Phasing out fossil fuel subsidies globally would conservatively save governments a total $775 billion in a single year, according to a 2012 estimate by Oil Change International and the Natural Resources Defense Council.[54]

If these various measures were taken together, they would raise more than $2 trillion annually.[55] Certainly enough for a very healthy start to finance a Great Transition (and avoid a Great Depression). And that doesn't count any royalty increases on fossil fuel extraction. Of course, for any of these tax crackdowns to work, key governments would have to coordinate their responses so that corporations had nowhere to hide—a difficult task, though far from impossible, and one frequently bandied about at G20 summits.

In addition to the simple fact that the money is badly needed, there are practical political reasons why "polluter pays" should guide climate financing. As we have seen, responding to the climate crisis can offer real benefits to a majority of people, but real solutions will also, by definition, require short- and medium-term sacrifices and inconveniences. And what we know from past sacrifices made in the name of a crisis—most notably via rationing, conservation, and price controls

during both world wars—is that success depends entirely on a perception of fairness.

In Britain and North America during World War II, for instance, every strata of society was required to make do with less, even the very rich. And in fact, though overall consumption in the U.K. dropped by 16 percent, caloric intake for the poor increased during the war, because the rations provided low-income people with more than they could otherwise afford.[56] There was plenty of cheating and black market profiteering, of course, but these programs enjoyed broad-based support because they were, at least in theory, fair. The theme of equality pervaded government campaigns about these wartime programs: "Fair Shares for All" was a key slogan in the U.K, while the U.S. went with "Share and Share Alike" and "Produce, Conserve, Share and Play Square."[57] An Office of Price Administration pamphlet from 1942 argued that rationing was part of the American tradition. "What Is Rationing?" it asked.

> First, let's be sure what rationing is not. It is not starvation, long bread lines, shoddy goods. Rather, it is a community plan for dividing fairly the supplies we have among all who need them. Second, it is not "un-American." The earliest settlers of this country, facing scarcities of food and clothing, pooled their precious supplies and apportioned them out to everyone on an equal basis. It was an American idea then, and it is an American idea now, to share and share alike—to sacrifice, when necessary, but sacrifice together, when the country's welfare demands it.[58]

Governments also made sure that there were very public crackdowns on wealthy and well-connected individuals who broke the rules, sending the message that no one was exempt. In the U.K., movie stars, as well as corporations like Woolworth and Sainsbury, faced prosecution for rations violations. In the United States, cases were brought against some of the largest corporations in the country. It was no secret that many large U.S. manufacturers disliked the entire rationing system; they lobbied against it, because they believed it eroded their brand value. Yet they were forced to accept it all the same.[59]

This perception of fairness—that one set of rules applies to players big and small—has been entirely missing from our collective responses to climate change thus far. For decades, regular people have been asked to turn off their lights, put on sweaters, and pay premium prices for nontoxic cleaning products and renewable energy—and then watched as the biggest polluters have been allowed to expand their emissions without penalty. This has been the pattern ever since President Jimmy Carter addressed the American public in July 1979 about the fact that "too

many of us now tend to worship self-indulgence and consumption. Human identity is no longer defined by what one does, but by what one owns." He urged Americans "for your good and for your nation's security to take no unnecessary trips, to use carpools or public transportation whenever you can, to park your car one extra day per week, to obey the speed limit, and to set your thermostats to save fuel. Every act of energy conservation like this is more than just common sense—I tell you it is an act of patriotism."[60]

The address was initially well received but came to be derided as the "malaise" speech and is frequently cited as one of the reasons Carter lost his reelection bid to Ronald Reagan. And though he was not talking about climate change but rather a broad "crisis of confidence" against a backdrop of energy scarcity, the speech is still invoked as proof that any politician who asks voters to sacrifice to solve an environmental crisis is on a suicide mission. Indeed this assessment has shaped the win-win messaging of environmentalists ever since.

So it's interesting to note that the late intellectual Christopher Lasch, who was one of Carter's key advisors on the infamous speech, was also one of its most pointed critics. The author of*The Culture of Narcissism* had strongly urged the president to temper his message of personal austerity with assurances of fundamental fairness and social justice. As Lasch revealed to an interviewer years later, he had told Carter to "put a more populist construction in his indictment of American consumerism.… What was needed was a program that called for sacrifices all right, but made it clear that the sacrifices would be distributed in an equitable fashion." And that, Lasch said, "would mean that those most able to make sacrifices would be the ones on whom the sacrifices fell. That's what I mean by populism."[61]

We cannot know if the reaction might have differed had Carter listened to that advice and presented a plan for conservation that began with those pushing and profiting most from wasteful consumption. We do know that responses to climate change that continue to put the entire burden on individual consumers are doomed to fail. For instance, the annual "British Social Attitudes" survey, conducted by the independent NatCen Social Research, asked a set of questions about climate policies in the year 2000, and then again in 2010. It found that, "Whereas, 43 per cent a decade ago said they would be willing to pay higher prices to protect the environment, this is nowadays only true of 26 per cent. There has been a similar fall in the proportion prepared to pay higher taxes (31 to 22 per cent), but a smaller decline in relation to cuts in the standard of living (26 per cent to 20 per cent)."[62]

These results, and others like them, have been cited as proof that during times of economic hardship, people's environmental concerns go out the window. But that is not what these polls prove. Yes, there has been a drop in the willingness of individuals to bear the financial burden of responding to climate change, but not simply because economic times are hard. Western governments have responded to these hard times—which have been created by rampant greed and corruption among their wealthiest citizens—by asking those least responsible for the current conditions to bear the burden. After paying for the crisis of the bankers with cuts to education, health care, and social safety nets, is it any wonder that a beleaguered public is in no mood to bail out the fossil fuel companies from the crisis that they not only created but continue to actively worsen?

Most of these surveys, notably, don't ask respondents how they feel about raising taxes on the rich and removing fossil fuel subsidies, yet these are some of the most reliably popular policies around. And it's worth noting that a U.S. poll conducted in 2010—with the country still reeling from economic crisis—asked voters whether they would support a plan that "would make oil and coal companies pay for the pollution they cause. It would encourage the creation of new jobs and new technologies in cleaner energy like wind, solar, and nuclear power. The proposal also aims to protect working families, so it refunds almost all of the money it collects directly to the American people, like a tax refund, and most families end up better off." The poll found that three quarters of voters, including the vast majority of Republicans, supported the ideas as outlined, and only 11 percent strongly opposed it. The plan was similar to a proposal, known as "cap and dividend," being floated by a pair of senators at the time, but it was never seriously considered by the U.S. Senate.[63]

And when, in June 2014, Obama finally introduced plans to use the Environmental Protection Agency to limit greenhouse gas emissions from existing power plants, the coal lobby howled with indignation but public opinion was solidly supportive. According to one poll, 64 percent of Americans, including a great many Republicans, backed such a policy even though it would likely mean paying more for energy every month.[64]

The lesson from all this is not that people won't sacrifice in the face of the climate crisis. It's that they have had it with our culture of *lopsided* sacrifice, in which individuals are asked to pay higher prices for supposedly green choices while large corporations dodge regulation and not only refuse to change their behavior, but charge ahead with ever more polluting activities. Witnessing this, it is perfectly sensible for people to shed much of the keener enthusiasm that marked

the early days of the climate movement, and to make it clear that no more sacrifice will be made until the policy solutions on the table are perceived as just. This does not mean the middle class is off the hook. To fund the kind of social programs that will make a just transition possible, taxes will have to rise for everyone but the poor. But if the funds raised go toward social programs and services that reduce inequality and make lives far less insecure and precarious, then public attitudes toward taxation would very likely shift as well.

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To state the obvious: it would be incredibly difficult to persuade governments in almost every country in the world to implement the kinds of redistributive climate mechanisms I have outlined. But we should be clear about the nature of the challenge: it is not that "we" are broke or that we lack options. It is that our political class is utterly unwilling to go where the money is (unless it's for a campaign contribution), and the corporate class is dead set against paying its fair share.

Seen in this light, it's hardly surprising that our leaders have so far failed to act to avert climate chaos. Indeed even if aggressive "polluter pays" measures were introduced, it isn't at all clear that the current political class would know what to do with the money. After all, changing the building blocks of our societies—the energy that powers our economies, how we move around, the designs of our major cities—is not about writing a few checks. It requires bold long-term planning at every level of government, and a willingness to stand up to polluters whose actions put us all in danger. And that won't happen until the corporate liberation project that has shaped our political culture for three and a half decades is buried for good.

Just as the climate change deniers I met at the Heartland Institute fear, there is a direct relationship between breaking fossilized free market rules and making swift progress on climate change. Which is why, if we are to collectively meet the enormous challenges of this crisis, a robust social movement will need to demand (and create) political leadership that is not only committed to making polluters pay for a climate-ready public sphere, but willing to revive two lost arts: long-term public planning, and saying no to powerful corporations.

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[*] This was the situation not only in the Rockaways but seemingly wherever public housing was in the path of the storm. In Red Hook, Brooklyn, many residents were left without power for three weeks, during which time the Housing Authority never went systematically door-to-door. As sixty-year-old Wally Bazemore put it at an angry residents meeting: "We were literally in the dark and we were completely in the dark."

[*] This is why the persistent positing of population control as a solution to climate change is a distraction and moral dead end. As this research makes clear, the most significant cause of rising emissions is not the reproductive behavior of the poor but the consumer behaviors of the rich.

4

PLANNING AND BANNING

Slapping the Invisible Hand, Building a Movement

"Post-modernism has cut off the present from all futures. The daily media adds to this by cutting off the past. Which means that critical opinion is often orphaned in the present."

–John Berger, *Keeping a Rendezvous*, 1991[1]

"A reliably green company is one that is required to be green by law."

–Gus Speth, former dean of the Yale School of Forestry and Environmental Studies, 2008[2]

To understand how free market ideology continues to suffocate the potential for climate action, it's useful to look back on the most recent moment when transformative change of the scope required actually seemed like a real possibility, even in the United States. That time was 2009, the peak of the world financial crisis and the first year of the Obama presidency.

Hindsight is easy, granted, but bear with me: imagining what might have been can help clarify what the future might still create.

This was a moment when history was unfolding in fast-forward, when almost anything seemed possible, for better and worse. A large part of what made better scenarios seem possible was the decisive democratic mandate that Obama had just earned. He had been elected on a platform promising to rebuild the "Main Street" economy and to treat climate change as, in his words, "an opportunity, because if we create a new energy economy, we can create five million new jobs.… It can be an engine that drives us into the future the same way the computer was the engine for economic growth over the last couple of decades."[3] Both the fossil fuel companies and the environmental movement took it as a given that the new

president would introduce a bold piece of climate legislation early in his presidency.

The financial crisis, meanwhile, had just shattered public faith in laissez-faire economics around the world—so much so that there was tremendous support even in the U.S. for breaking long-standing ideological taboos against intervening directly in the market to create good jobs. That gave Obama the leverage to design a stimulus program worth about $800 billion (and he probably could have asked for more) to get the economy moving again.

The other extraordinary factor in this moment was the weak state of the banks: in 2009, they were still on their knees, dependent on trillions in bailout funds and loan guarantees. And there was a live debate unfolding about how those banks should be restructured in exchange for all that taxpayer generosity (there was even serious discussion of nationalization). The other factor worth remembering is that starting in 2008, two of the Big Three automakers—companies at the very heart of the fossil fuel economy—had so badly mismanaged their affairs that they too had landed in the hands of the government, which had been tasked with securing their viability.

All told, three huge economic engines—the banks, the auto companies, and the stimulus bill—were in a state of play, placing more economic power in the hands of Obama and his party than any U.S. government since the administration of Franklin Delano Roosevelt. Imagine, for a moment, if his administration had been willing to invoke its newly minted democratic mandate to build the new economy promised on the campaign trail—to treat the stimulus bill, the broken banks, and the shattered car companies as the building blocks of that green future. Imagine if there had been a powerful social movement—a robust coalition of trade unions, immigrants, students, environmentalists, and everyone else whose dreams were getting crushed by the crashing economic model—demanding that Obama do no less.

The stimulus package could have been used to build the best public transit systems and smart grids in the world. The auto industry could have been dramatically reengineered so that its factories built the machinery to power that transition—not just a few token electric cars (though those too) but also vast streetcar and high-speed rail systems across an underserved nation. Just as a shuttered auto parts factory in Ontario had reopened as the Silfab solar plant, similar transitions could have been made in closed and closing factories across the continent. This transformation was proposed at the time by one of the most

important intellectuals of the North American labor movement, Sam Gindin, who served for many years as research director for the Canadian Auto Workers Union:

> If we are serious about incorporating environmental needs into the economy, this means changing everything about how we produce and consume and how we travel and live. The potential work to be done in this regard—in the tool and die shops that are closing, the component plants that have the capacity to make more than a specific component, and by a workforce anxious to do useful work—is limitless.
>
> The equipment and skills can be used to not only build different cars, and different car components, but to expand public transit and develop new transportation systems. They can participate in altering, in line with environmental demands, the machinery in every workplace and the motors that run the machinery. They can be applied to new systems of production that recycle used materials and final products (such as cars). Homes will have to be retrofitted and appliances modified. The use of solar panels and wind turbines will spread, new electricity grids will have to be developed, and urban infrastructure will have to be reinvented to accommodate the changes in transportation and energy use.
>
> What better time to launch such a project than now, in the face of having to overcome both the immediate economic crisis and the looming environmental crisis? And what greater opportunity to insist that we cannot lose valuable facilities and equipment, nor squander the creativity, knowledge and abilities of engineers, skilled trades and production workers?[4]

Retrofitting factories on that scale is expensive, to be sure, and that's where the bailed-out banks could have come in. A government unafraid to use its newfound power could have used the leverage it had over the banks (having just pulled them from the precipice) to enlist them—kicking and screaming if necessary—in this great transformation. As every banker knows, when you loan someone money, you acquire a fair bit of power over them. Does a factory need some capital to make the transition from dirty to clean? If it has a credible business plan, especially one that supports the stimulus vision, then the bailed-out banks could have been mandated by the state as part of the bailout to give that factory a loan. If one refused, it could have been nationalized, as several major banks were around the world in the period.

Many of the previous factory owners would not have been interested in sticking around for this kind of transition, since the profit margins, at least at first, would have been small. But that is no reason to allow useful machines to be sold off as

scrap. The workers at these plants, as Gindin suggested, could have been given the chance to run their old factories as cooperatives, as happened in several hundred abandoned factories in Argentina after that country's economic crisis in 2001. I lived in Buenos Aires for two years while making a documentary film about those factories, called *The Take*. One of the stories we told was about a group of workers who took over their shuttered auto-parts plant and turned it into a thriving co-op. It was a highly emotional journey, as workers took big risks and discovered new skills they had not known they possessed. And over a decade later, we still receive reports about how well things are going at the factory. Most of Argentina's "recovered factories"—as the hundreds of worker-run co-ops are called—are still in production, churning out everything from kitchen tiles to men's suits.[*] This decentralized ownership model has the added benefit of pushing against the trend toward utterly unsustainable wealth inequality; rather than simply propping up the current global system in which eighty-five people control as much wealth as half the world's population, the ability to create wealth is gradually dispersed to the workers themselves, and the communities sustained by the presence of well-paying jobs.[5]

If that kind of coherent and sweeping vision had emerged in the United States in that moment of flux as the Obama presidency began, right-wing attempts to paint climate action as an economy killer would have fallen flat. It would have been clear to all that climate action is, in fact, a massive job creator, as well as a community rebuilder, and a source of hope in moments when hope is a scarce commodity indeed. But all of this would have required a government that was unafraid of bold long-term economic planning, as well as social movements that were able to move masses of people to demand the realization of that kind of vision. (The mainstream climate organizations in the U.S., in this crucial period, were instead narrowly focused on a failed attempt to get a piece of carbon-trading energy legislation through Congress, not on helping to build a broad movement.)

In the absence of those factors, that rarest of historical moments—so pregnant with potential—slipped away. Obama let the failed banks do what they liked, despite the fact that their gross mismanagement had put the entire economy at risk. The fundamentals of the car industry were also left intact, with little more than a fresh wave of downsizing to show for the crisis. The industry lost nearly 115,000 manufacturing jobs between 2008 and 2014.[6]

To be fair, there was significant support for wind and solar and for green initiatives like energy efficient building upgrades in the stimulus bill; without question, as journalist Michael Grunwald shows in *The New New Deal*, the funding

amounted to "the biggest and most transformative energy bill in U.S. history." But public transit was still inexplicably shortchanged and the biggest infrastructure winner was the national highway system, precisely the wrong direction from a climate perspective. This failure was not only Obama's; as University of Leeds ecological economist Julia Steinberger observes, it was global. The financial crisis that began in 2008 "should have been an opportunity to invest in low-carbon infrastructure for the 21st century. Instead, we fostered a lose-lose situation: carbon emissions rocketing to unprecedented levels, alongside increases in joblessness, energy costs, and income disparities."[7]

What stopped Obama from seizing his historical moment to stabilize the economy and the climate at the same time was not lack of resources, or a lack of power. He had plenty of both. What stopped him was the invisible confinement of a powerful ideology that had convinced him—as it has convinced virtually all of his political counterparts—that there is something wrong with telling large corporations how to run their businesses even when they are running them into the ground, and that there is something sinister, indeed vaguely communist, about having a plan to build the kind of economy we need, even in the face of an existential crisis.

This is, of course, yet another legacy bequeathed to us by the free market counterrevolution. As recently as the early 1970s, a Republican president—Richard Nixon—was willing to impose wage and price controls to rescue the U.S. economy from crisis, popularizing the notion that "We are all Keynesians now."[8] But by the 1980s, the battle of ideas waged out of the same Washington think tanks that now deny climate change had successfully managed to equate the very idea of industrial planning with Stalin's five-year plans. Real capitalists don't plan, these ideological warriors insisted—they unleash the power of the profit motive and let the market, in its infinite wisdom, create the best possible society for all.

Obama, obviously, does not share this extreme vision: as his health care and other social policies suggest, he believes government should nudge business in the right direction. And yet he is still sufficiently a product of his anti-planning era that when he had the banks, the auto companies, and the stimulus in his hands, he saw them as burdens to be rid of as soon as possible, rather than as a rare chance to build an exciting new future.

If there is a lesson in this tremendous missed opportunity, it is this: if we are going to see climate action of the scale and speed required, the left is going to have to quickly learn from the right. Conservatives have managed to stall and roll back

climate action amidst economic crisis by making climate about economics—about the pressing need to protect growth and jobs during difficult times (and they are always difficult). Progressives can easily do the same: by showing that the real solutions to the climate crisis are also our best hope of building a much more stable and equitable economic system, one that strengthens and transforms the public sphere, generates plentiful, dignified work, and radically reins in corporate greed.

But before that can happen, it's clear that a core battle of ideas must be fought about the right of citizens to democratically determine what kind of economy they need. Policies that simply try to harness the power of the market—by minimally taxing or capping carbon and then getting out of the way—won't be enough. If we are to rise to a challenge that involves altering the very foundation of our economy, we will need every policy tool in the democratic arsenal.

Planning for Jobs

Some policymakers already understand this, which is why so many of the climate disputes being dragged in front of WTO tribunals hinge on attempts by governments, whether in Ontario or India, to reintroduce some measure of industrial planning to their economies. These governments are saying to industry: we will support you, but only if you support the communities from which you profit, by providing well-paying local jobs, and sourcing your products locally.

The reason governments turn to buy-local or hire-local policies such as these is because they make political sense. Any response to the climate crisis that has a chance of success will create not just winners but also a significant number of losers—industries that can no longer exist in their current form and workers whose jobs will disappear. There is little hope of bringing the fossil fuel companies onside to a green transition; the profits they stand to lose are simply too great. That is not the case, however, for the workers whose salaries are currently tied to fossil fuel extraction and combustion.

What we know is this: trade unions can be counted on to fiercely protect jobs, however dirty, if these are the only jobs on offer. On the other hand, when workers in dirty sectors are offered good jobs in clean sectors (like the former autoworkers at the Silfab factory in Toronto), and are enlisted as active participants in a green transition, then progress can happen at lightning speed.

The potential job creation is huge. For instance, a plan put forward by the U.S. BlueGreen Alliance, a body that brings together unions and environmentalists,

estimated that a $40 billion annual investment in public transit and high-speed rail for six years would produce more than 3.7 million jobs during that period. And we know that investments in public transit pay off: a 2011 study by research and policy organization Smart Growth America found they create 31 percent more jobs per dollar than investment in new road and bridge construction. Investing in the maintenance and repair of roads and bridges creates 16 percent more jobs per dollar than investment in new road and bridge construction.[9] All of which means that making existing transportation infrastructure work better for more people is a smarter investment from both a climate and an economic perspective than covering more land with asphalt.

Renewable energy is equally promising, in part because it creates more jobs per unit of energy delivered than fossil fuels. In 2012, the International Labour Organization estimated that about five million jobs had already been created in the sector worldwide—and that is with only the most scattershot and inadequate levels of government commitment to emission reduction.[10] If industrial policy were brought in line with climate science, the supply of energy through wind, solar, and other forms of renewable energy (geothermal and tidal power, for example) would generate huge numbers of jobs in every country—in manufacturing, construction, installation, maintenance, and operation.

Similar research in Canada has found that an investment of $1.3 billion (the amount the Canadian government spends on subsidies to oil and gas companies) could create seventeen to twenty thousand jobs in renewable energy, public transit, or energy efficiency—six to eight times as many jobs as that money generates in the oil and gas sector. And according to a 2011 report for the European Transport Workers Federation, comprehensive policies to reduce emissions in the transport sector by 80 percent would create seven million new jobs across the continent, while another five million clean energy jobs in Europe could slash electricity emissions by 90 percent. A bold coalition in South Africa, meanwhile, going under the banner of One Million Climate Jobs, is calling for mass job creation programs in areas ranging from renewable energy to public transit to ecosystem restoration to small-scale sustainable farming. "By placing the interests of workers and the poor at the forefront of strategies to combat climate change we can simultaneously halt climate change and address our jobs bloodbath," the campaign states.[11]

These are not, however, the kinds of jobs that the market will create on its own. They will be created on this scale only by thoughtful policy and planning. And in some cases, having the tools to make those plans will require citizens doing what the residents of so many German cities and towns have done: taking back control

over electricity generation so that the switch to renewables can be made without delay, while any profits generated go not to shareholders but back into supporting hungry public services.

And it's not only power generation that should receive this treatment. If the private companies that took over the national railways are cutting back and eroding services at a time when the climate crisis demands expanded low-carbon transportation alternatives to keep more of us out of planes, then these services too must be reclaimed. And after more than two decades of hard experience with privatizations—which has too often involved diminished services combined with higher prices—a great many people are ready to consider that option. For instance, a British poll released in November 2013 found "voters of all politics united in their support for nationalisation of energy and rail. 68 per cent of the public say the energy companies should be run in the public sector, while only 21 per cent say they should remain in private hands. 66 per cent support nationalising the railway companies while 23 per cent think they should be run privately." One of the most surprising aspects of the poll was the amount of support for nationalization among self-described Conservative voters: 52 percent favored taking back both the energy companies and the rails.[12]

Planning for Power

The climate case for rethinking private ownership is particularly strong when it comes to natural gas, which is currently being touted by many governments as a "bridge fuel." The theory is that, in the time it takes for us to make a full switch to zero carbon sources of energy, gas can serve as an alternative to dirtier fossil fuels like coal and oil. It is far from clear that this bridge is necessary, given the speed of the shift to renewables in countries like Germany. And there are many problems, as we will see, with the whole idea of natural gas being clean. But from a planning perspective, the most immediate problem is that for the bridge concept to work, ways would have to be found to ensure that natural gas was being used *only* as a replacement for coal and oil—and not to undercut renewable energy. And this is a very real concern: in the U.S., the deluge of cheap natural gas thanks to fracking has already hurt the country's wind market, with wind power's share of the new electricity coming online plummeting from at least 42 percent in 2009 to 25 percent in 2010 and 32 percent in 2011—the key years that fracking skyrocketed.[13] Moreover, once the "bridge" to a renewable future has been built,

there would have to be a way to phase out gas extraction completely, since it is a major emitter of greenhouse gases.

There are various ways to design a system that would meet these specific goals. Governments could mandate "combined-cycle" plants that are better at ramping up and down to support wind and solar when available, for example, and they could firmly link any new gas plants to coal plants taken off the grid. Also crucial, says the Canadian Centre for Policy Alternatives' Ben Parfitt, an expert on fracking impacts, would be "regulations in place at the state and the national levels that made the link between where the gas is being produced and how it is being produced, and the ultimate production of the power," meaning that power plants could only source gas that was proven to have lower life-cycle emissions than coal.[14] And that could well rule out fracked gas completely. Barriers would also need to be placed on the ability of companies to export their gas, in order to prevent it from being burned in countries that place no such restrictions. These measures would limit many, though by no means all, of the risks associated with natural gas, but they would also seriously eat into the profitability of the sector.

Which raises the question: why would notoriously ruthless for-profit companies accept a business model that relies on them not competing with large parts of the energy sector (wind and solar), requires that they submit to a huge range of costly regulation, all with the eventual goal of putting themselves out of business? The answer is that they would not. Treating natural gas as a truly temporary transition fuel is anathema to the profit-seeking imperative that drives these corporations. After all, who is doing the fracking? It's companies like BP and Chevron, with their long track records of safety violations and fending off tough regulation. These are companies whose business model requires that they replace the oil and gas they have in production with new reserves of fossil fuels or face a shareholder rebellion. That same growth-above-all model demands that they occupy as much of the energy market as possible—which means competing not just with coal but with every player in the energy market, including vulnerable renewables. To quote John Browne when he was chief executive of BP (he now heads the gas giant Cuadrilla): "Corporations have to be responsive to price signals. We are not public service."[15] True enough—but that was neither always the case with our energy companies, nor must it remain so.

The bottom line is simple. No private company in the world wants to put itself out of business; its goal is to expand its market. Which is why, if natural gas is to serve as a short-term transition fuel, that transition must be tightly managed by—and for—the public, so that the profits from current sales are reinvested in

renewable technologies for the future, and the sector is constrained from indulging in the kind of exponential growth it is currently enjoying amidst the shale gas boom.[16]

The solution is most emphatically not energy nationalization on existing models. The big publicly owned oil companies—from Brazil's Petrobras to Norway's Statoil to PetroChina—are just as voracious in pursuing high-risk pools of carbon as their private sector counterparts.[17] And in the absence of a credible transition plan to harness the profits for a switch to renewable energy, having the state as the major shareholder in these companies has profoundly corrupting effects, creating an addiction to easy petrodollars that makes it even less likely that policymakers will introduce measures that hurt fossil fuel profits in any way. In short, these centralized monsters are fossils in every sense of the word, and need to be broken up and phased out whether they are held in public or private hands.

A better model would be a new kind of utility—run democratically, by the communities that use them, as co-ops or as a "commons," as author and activist David Bollier and others have outlined.[18] This kind of structure would enable citizens to demand far more from their energy companies than they are able to now—for example, that they direct their profits away from new fossil fuel exploration and obscene executive compensation and shareholder returns and into building the network of complementary renewables that we now know has the potential to power our economies in our lifetimes.

The rapid rise of renewables in Germany makes a powerful case for this model. The transition has occurred, first of all, within the context of a sweeping, national feed-in tariff program that includes a mix of incentives designed to ensure that anyone who wants to get into renewable power generation can do so in a way that is simple, stable, and profitable. Providers are guaranteed priority access to the grid, and offered a guaranteed price so the risk of losing money is low.

This has encouraged small, noncorporate players to become renewable energy providers—farms, municipalities, and hundreds of newly formed co-ops. That has decentralized not just electrical power, but also political power and wealth: roughly half of Germany's renewable energy facilities are in the hands of farmers, citizen groups, and almost nine hundred energy cooperatives. Not only are they generating power but they also have the chance to generate revenue for their communities by selling back to the grid. Over all, there are now 1.4 million photovoltaic installations and about 25,000 windmills. Nearly 400,000 jobs have been created.[19]

Each one of these measures represents a departure from neoliberal orthodoxy: the government is engaging in long-term national planning; it is deliberately

picking winners in the market (renewables over nuclear power, which it is simultaneously closing down); it is fixing prices (a clear market interference); and creating a fair playing field for any potential renewable energy producer—big or small—to enter the market. And yet despite—or rather because of—these ideological heresies, Germany's transition is among the fastest in the world. According to Hans Thie, the advisor on economic policy for the Left Party in the German parliament, who has been intensely involved in the transition, "Virtually all expansion estimates have been surpassed. The speed of expansion is considerably higher than had been expected."[20]

Nor can this success be dismissed as a one-off. Germany's program mirrors one implemented in Denmark in the 1970s and 1980s, which helped switch more than 40 percent of the country's electricity consumption to renewables, mostly wind. Up to around 2000, roughly 85 percent of Danish wind turbines were owned by small players like farmers and co-ops. Though large offshore wind operators have entered the market in recent years, this remains a striking commonality between Denmark and Germany: it's neither big nationally owned monopolies nor large corporate-owned wind and solar operators that have the best track record for spurring renewable energy turnarounds—it's communities, co-ops, and farmers, working within the context of an ambitious, well-designed national framework.[21] Though often derided as the impractical fantasy of small-is-beautiful dreamers, decentralization delivers, and not on a small scale but on the largest scale of any model attempted thus far, and in highly developed postindustrial nations.

It is also surely no coincidence that Denmark, a deeply social democratic country, introduced these policies well before it began its halfhearted embrace of neoliberalism, or that Germany—while prescribing brutal austerity to debtor countries like Greece and Spain—has never fully followed these prescriptions at home. These examples make clear that when governments are willing to introduce bold programs and put goals other than profit making at the forefront of their policymaking, change can happen with astonishing speed.

Decentralized control over energy is also important for very practical reasons. There are plenty of examples of large-scale, privately owned renewable energy projects that fell apart because they were imposed from the outside without local input or profit sharing. Indeed, when communities are excluded in this way, there is a very good chance that they will rebel against the noise and "unsightliness" of wind turbines, or the threats—some real, some imagined—to wildlife and ecosystems posed by solar arrays. These objections are often dismissed as

NIMBY-ism (Not in My Backyard) and are used as more evidence of humanity's tendency toward selfishness and shortsightedness.

But in several regions, these objections have been entirely neutralized with thoughtful planning. As Preben Maegaard, former president of the World Wind Energy Association, once put it, "When local people own the wind farms, and share in the benefits, they will support them. It won't be NIMBY (Not In My Back Yard), it will be POOL (Please On Our Land)."[22]

This is particularly true in times of unending public austerity. "The future is something that is not relevant at the moment for some people because they're surviving for the present," Dimitra Spatharidou, a Greek climate change activist engaged in that country's broader anti-austerity movement, told me. "It's difficult to understand the concept of sustainability when people are fighting for food and to have energy to heat their homes." Because of these pressing concerns, her work is "not about preaching about what happens when climate change hits Greece, it's about what's happening now and how we can change our economies and our societies into something better, to something more equitable and to something fair."[23] For Spatharidou, that has meant showing how community-controlled renewable energy can be cheaper than dirtier alternatives, and can even be a source of income when energy is fed back into the grid. It has also meant resisting a government push to privatize municipal water supplies, pushing instead for community ownership, an idea with broad support in Greece. The key, she says, is to offer people something the current system doesn't: the tools and the power to build a better life for themselves.

This relationship between power decentralization and successful climate action points to how the planning required by this moment differs markedly from the more centralized versions of the past. There is a reason, after all, why it was so easy for the right to vilify state enterprises and national planning: many state-owned companies were bureaucratic, cumbersome, and unresponsive; the five-year plans cooked up under state socialist governments were indeed top-down and remote, utterly disconnected from local needs and experiences, just as the plans issued by the Communist Party of China's Central Committee are today.

The climate planning we need is of a different sort entirely. There is a clear and essential role for national plans and policies—to set overall emission targets that keep each country safely within its carbon budget, and to introduce policies like the feed-in tariffs employed in Germany, Ontario, and elsewhere, that make renewable energy affordable. Some programs, like national energy grids and effective rail services, must be planned, at least in part, at the national level. But if

these transitions are to happen as quickly as required, then the best way to win widespread buy-in is for the actual implementation of a great many of the plans to be as decentralized as possible. Communities should be given new tools and powers to design the methods that work best for them—much as worker-run co-ops have the capacity to play a huge role in an industrial transformation. And what is true for energy and manufacturing can be true for many other sectors: transit systems accountable to their riders, water systems overseen by their users, neighborhoods planned democratically by their residents, and so on.

Most critically, farming—a major source of greenhouse gas emissions—can also become an expanded sector of decentralized self-sufficiency and poverty reduction, as well as a key tool for emission reduction. Currently, much of the debate about agriculture and climate change focuses on contrasting the pros and cons of industrial agriculture versus local and organic farming, with one side emphasizing higher yields and the other emphasizing lower chemical inputs and often (though not always) shorter supply lines. Coming up through the middle is "agroecology," a less understood practice in which small-scale farmers use sustainable methods based on a combination of modern science and local knowledge.

Based on the principle that farming should maximize species diversity and enhance natural systems of soil protection and pest control, agroecology looks different wherever its holistic techniques are practiced. But a report in *National Geographic*provides a helpful overview of how these principles translate in a few different contexts: the integration of "trees and shrubs into crop and livestock fields; solar-powered drip irrigation, which delivers water directly to plant roots; intercropping, which involves planting two or more crops near each other to maximize the use of light, water, and nutrients; and the use of green manures, which are quick-growing plants that help prevent erosion and replace nutrients in the soil."[24]

These methods and many others maintain healthy soil while producing nutritious food—more than industrial agriculture does, per unit area—and limit the need for farmers to buy expensive products like chemical pesticides, fertilizers, and patented seeds. But many farmers who have long used these methods have realized that they also have a triple climate benefit: they sequester carbon in the soil, avoid fossil fuel–based fertilizers, and often use less carbon for transportation to market, in addition to better withstanding extreme weather and other climate impacts. And communities that can feed themselves are far less vulnerable to price shocks within the broader globalized food system. Which is why La Via Campesina, a global

network of small farmers with 200 million members, often declares, "Agroecology is the solution to solve the climate crisis." Or "small farmers cool the planet."[25]

In recent years, a phalanx of high-level food experts has come to similar conclusions. "A large segment of the scientific community now acknowledges the positive impacts of agroecology on food production, poverty alleviation and climate change mitigation—and this is what is needed in a world of limited resources," says Olivier De Schutter, who served as the UN Special Rapporteur on the Right to Food from 2008 to 2014.[26]

Just as they dismiss decentralized energy as too small, defenders of Big Agribusiness maintain that local organic agriculture simply cannot feed a world of 7 billion and growing—but those claims are generally based on comparisons between yields from industrial, often genetically engineered monocrops, and organic monocrops. Agroecology is left out of the picture. That's a problem because as De Schutter notes, "Today's scientific evidence demonstrates that agroecological methods outperform the use of chemical fertilizers in boosting food production where the hungry live—especially in unfavorable environments." He cites the example of Malawi, where a recent turn to agroecology has led to a doubling or tripling of maize yields in some areas, and adds that "to date, agroecological projects have shown an average crop yield increase of 80% in 57 developing countries, with an average increase of 116% for all African projects. Recent projects conducted in 20 African countries demonstrated a doubling of crop yields over a period of 3–10 years."[27]

All this amounts to a compelling case against the claim, frequently voiced by powerful philanthropists like Bill Gates, that the developing world, particularly Africa, needs a "New Green Revolution"—a reference to philanthropic and government efforts in the mid-twentieth century to introduce industrial agriculture in Asia and Latin America. "It's often claimed, particularly by those who'd like to see it rebooted, that the Green Revolution saved the world from hunger," sociologist Raj Patel, author of *Stuffed and Starved*, told me. "The problem is that even with the Green Revolution, starvation continues—particularly in India, where the revolution was most intense. Hunger isn't about the amount of food around—it's about being able to afford and control that food. After all, the U.S. has more food than it knows what to do with, and still 50 million people are food insecure."[28]

And he adds, "The tragedy here is that there are thousands of successful experiments, worldwide, showing how climate-smart agriculture can work. They're characterized not by expensive fertilizer from Yara and proprietary seeds from Monsanto, but knowledge developed and shared by peasants freely and

equitably." And, Patel says, "In its finest moments, agroecologygets combined with 'food sovereignty,' with democratic control of the food system, so that not only is more food produced, but it's distributed so that *everyone* gets to eat it too."[29]

About That German Miracle …

We now have a few models to point to that demonstrate how to get far-reaching decentralized climate solutions off the ground with remarkable speed, while fighting poverty, hunger, and joblessness at the same time. But it's also clear that, however robust, these tools and incentives are not enough to lower emissions in time. And this brings us to what has most definitely*not* worked about the German energy transition.

In 2012—with its renewable sector soaring to new heights—German emissions actually went up from the previous year. Preliminary data suggest that the same thing happened in 2013. The country's emissions are still 24 percent below what they were in 1990, so these two years may turn out to have been a short-term blip, but the fact that the dramatic rise of renewables is not corresponding to an equally dramatic drop in greenhouse gas emissions is cause for great concern.[30] It also tells us something critical about the limits of economic plans based on incentives and market mechanisms alone.

Many have attributed the emissions rise to Germany's decision to phase out nuclear power, but the facts are not nearly so simple. It's true that in 2011, in the wake of the Fukushima disaster, the government of Chancellor Angela Merkel—under intense pressure from the country's powerful antinuclear movement—announced that it would phase out nuclear power by 2022, and took aggressive action to begin the process. But at the same time, the government took no similar action to phase out coal and even allowed coal companies to export power to other countries. So even though Germans have indeed been moving in ever greater numbers to renewable energy, coal power continued to grow, with some of it displacing nuclear power, some of it displacing gas, and some of it being exported. And much of the coal in Germany is lignite, often referred to as brown coal, a low-grade variety with particularly high emissions.[31]

As we have already seen, the latest research on renewable energy, most notably by Mark Jacobson's team at Stanford, shows that a global transition to 100 percent renewable energy—"wind, water and solar"—is both technically and economically feasible "by as early as 2030." That means lowering greenhouse

emissions in line with science-based targets does not have to involve building a global network of new nuclear plants. In fact that could well slow down the transition, since renewable energy is faster and cheaper to roll out than nuclear, critical factors given the tightness of the timeframe. Moreover, says Jacobson, in the near-term nuclear is "not carbon-free, no matter what the advocates tell you. Vast amounts of fossil fuels must be burned to mine, transport and enrich uranium and to build the nuclear plant. And all that dirty power will be released during the 10 to 19 years that it takes to plan and build a nuclear plant. (A wind farm typically takes two to five years.)" He concludes that "if we invest in nuclear versus true renewables, you can bet that the glaciers and polar ice caps will keep melting while we wait, and wait, for the nuclear age to arrive. We will also guarantee a riskier future for us all." Indeed, renewable installations present dramatically lower risks than either fossil fuels or nuclear energy to those who live and work next to them. As comedian Bill Maher once observed, "You know what happens when windmills collapse into the sea? A splash."[*32]

That said, about 12 percent of the world's power is currently supplied by nuclear energy, much of it coming from reactors that are old and obsolete.[33] From a climate perspective, it would certainly be preferable if governments staggered their transitions away from high-risk energy sources like nuclear,prioritizing fossil fuels for cuts because the next decade is so critical for getting us off our current trajectory toward 4–6 degrees Celsius of warming. That would be compatible with a moratorium on new nuclear facilities, a decommissioning of the oldest plants and then a full nuclear phase-out once renewables had decisively displaced fossil fuels.

And yet it must also be acknowledged that it was the power of Germany's antinuclear movement that created the conditions for the renewables revolution in the first place (as was the case in Denmark in the 1980s), so there might have been no energy transition to debate without that widespread desire to get off nuclear due to its many hazards. Moreover, many German energy experts are convinced that the speed of the transition so far proves that it is possible to phase out both nuclear and fossil fuels simultaneously. A 2012 report by the German National Center for Aerospace, Energy and Transport Research (DLR), for instance, demonstrated that 67 percent of the electicity in all of the EU could come from renewables by 2030, with that number reaching 96 percent by 2050.[34] But, clearly, this will become a reality only if the right policies are in place.

For that to happen, the German government would have to be willing to do to the coal industry what it has been willing to do to the nuclear power industry: introduce specific, top-down regulations to phase it out. Instead, because of the

vast political power of the German coal lobby, the Merkel government has relied on the weak market mechanism of carbon trading, through the European emissions trading system, to try to put negative pressure on coal.[35] When the European carbon market fell apart, and the price of carbon plummeted, this strategy proved disastrous. Coal was cheap, there was no real penalty to burning it, and there were no blocks on exporting coal power, and so key years that should have been triumphs over pollution became setbacks.

Tadzio Mueller, a Berlin-based researcher and climate expert, put the problem to me like this: "German emissions are not up because nuclear power is down. They're up because nobody told the German power companies not to burn coal, and as long as they can profitably sell the electricity somewhere, they'll burn the coal—even if most electricity consumed in Germany was renewable. What we need are strict rules against the extraction and burning of coal. Period."[36]

It is critical for governments to put creative incentives in place so that communities around the world have tools to say yes to renewable energy. But what the German experience shows is that all that progress will be put at risk unless policymakers are willing simultaneously to say no to the ever rapacious fossil fuel industry.

Remembering How to Say No

Even before I saw the giant mines, when the landscape out the window was still bright green boggy marshes and lush boreal forest, I could feel them—a catch in the back of my throat. Then, up and over a small elevation, there they were: the notorious Alberta tar sands, a parched, gray desert stretching to the horizon. Mountains of waste so large workers joke that they have their own weather systems. Tailing ponds so vast they are visible from space. The second largest dam in the world, built to contain that toxic water. The earth, skinned alive.

Science fiction is rife with fantasies of terraforming—humans traveling to lifeless planets and engineering them into earthlike habitats. The Canadian tar sands are the opposite: terra-deforming. Taking a habitable ecosystem, filled with life, and engineering it into a moonscape where almost nothing can live. And if this goes on, it could impact an area roughly the size of England. All to access a semisolid form of "unconventional" oil known as bitumen that is so difficult and energy-intensive to extract that the process is roughly three to four times as greenhouse gas intensive as extracting conventional oil.[37]

In June 2011, I cosigned a letter drafted by author and climate activist Bill McKibben that called on people to come to Washington, D.C., "in the hottest and stickiest weeks of the summer" to get arrested protesting the proposed Keystone XL pipeline. Amazingly, more than 1,200 people did just that, making it the largest act of civil disobedience in the history of the North American climate movement.[38]

For over a year, a coalition of ranchers and Indigenous people who lived along the proposed route of the pipeline had been campaigning hard against the project. But the action in Washington took the campaign national, and turned it into a flashpoint for a resurgent U.S. climate movement.

The science for singling out Keystone XL was clear enough. The pipeline would be carrying oil from the Alberta tar sands, and James Hansen, then still working at NASA, had recently declared that if the bitumen trapped in the tar sands was all dug up and burned, it would be "game over for the climate."[39] But there was also some political strategy at work: unlike so many other key climate policies, which either required approval from Congress or were made at the state level, the decision about whether to approve the Keystone XL pipeline was up to the State Department and, ultimately, the president himself, based on whether he determined the project to be in the "national interest." On this one, Obama would have to give his personal yes or no, and it seemed to us that there was value in extracting either answer.

If he said no, that would be a much needed victory on which to build at a time when the U.S. climate movement, bruised from the failure to get energy legislation through Congress, badly needed some good news. If he said yes, well, that too would be clarifying. Climate activists, almost all of whom had worked to get Obama elected, would have to finally abandon the hopes they had pinned on the young senator who had proclaimed that his election would be remembered as "the moment when the rise of the oceans began to slow and our planet began to heal."[40]Letting go of that faith would be disillusioning for many, but at least tactics could be adjusted accordingly. And it seemed we would not have to wait long for a verdict: the president would be in a position to make his decision by early September, which is why the civil disobedience was called for the end of August.

It never occurred to us in those early strategy sessions at350.org, the climate organization that McKibben cofounded and where I am a board member, that three years later we would still be waiting for the president's yes or no. Three years during which Obama waffled and procrastinated, while his administration ordered more environmental reviews, then reviews of those reviews, then reviews of those too.

A great deal of intellectual energy has been expended trying to interpret the president's mixed signals on Keystone XL—at times he seemed to be sending a clear message that he was going to give his approval, as when he arranged for a photo op in front of a raft of metal pipeline waiting to be laid down; other times he seemed to be suggesting that he was leaning toward rejection, as when he declared, in one of his more impassioned speeches about climate change, that Keystone would be approved "only if this project does not significantly exacerbate the problem of carbon pollution."[41]

But whichever way the decision eventually goes (and one can hope that we will know the answer by the time you read this), the drawn-out saga made at least one thing absolutely clear. Like Angela Merkel, Obama has a hell of a hard time saying no to the fossil fuel industry. And that's a very big problem because to lower emissions as rapidly and deeply as required, we need to keep large, extremely profitable pools of carbon in the ground—resources that the fossil fuel companies are fully intending to extract.

That means our governments are going to have to start putting strict limits on the industry—limits ranging from saying no to pipelines linked to expanded extraction, to caps on the amount of carbon corporations can emit, to banning new coal-fired power plants, to winding down dirty-energy extraction projects like the Alberta tar sands, to saying no to demands to open up new carbon frontiers (like the oil trapped under melting Arctic ice).

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In the 1960s and 1970s, when a flurry of environmental legislation was passed in the U.S. and in other major industrial countries, saying no to dirty industry was, though never easy, an accepted part of the balancing act of government. That is simply no longer the case, as is evident from the howls of outrage from Republicans and many Democrats over the mere suggestion that Obama might reject Keystone XL, a moderate-sized infrastructure project that, by the president's own admission, would create so few lasting jobs that they represent "a blip relative to the need."[42] Given how wrenchingly difficult that yes-or-no regulatory decision proved to be, it should not be at all surprising that broader, more forceful controls on how much carbon should be extracted and emitted have thus far been entirely elusive.

Obama's much-heralded move in June 2014 mandating emission reductions from power plants was certainly the right direction, but the measures were still much too timid to bring the U.S. in line with a safe temperature trajectory. As

author and long-time climate watcher Mark Hertsgaard observed at the time, "President Obama clearly grasps the urgency of the climatecrisis and has taken important steps to address it. But it is his historical fate to be in power at a time when good intentions and important steps are no longer enough.… Perhaps all this places an unfair burden on President Obama. But science does not care about fair, and leaders inherit the history they inherit." And yet as Hertsgaard acknowledges, the kind of policies that would be enough "seem preposterous to the political and economic status quo."[43]

This state of affairs is, of course, yet another legacy of the free market counterrevolution. In virtually every country, the political class accepts the premise that it is not the place of government to tell large corporations what they can and cannot do, even when public health and welfare—indeed the habitability of our shared home—are clearly at stake. The guiding ethos of light-touch regulation, and more often of active deregulation, has taken an enormous toll in every sector, most notably the financial one. It has also blocked commonsense responses to the climate crisis at every turn—sometimes explicitly, when regulations that would keep carbon in the ground are rejected outright, but mostly implicitly, when those kinds of regulations are not even proposed in the first place, and so-called market solutions are favored for tasks to which they are wholly unequipped.

It's true that the market is great at generating technological innovation and, left to its own devices, R&D departments will continue to come up with impressive new ways to make solar modules and electrical appliances more efficient. But at the same time, market forces will also drive new and innovative ways to get hard-to-reach fossil fuels out of the deep ocean and hard shale—and those dirty innovations will make the green ones essentially irrelevant from a climate change perspective.

At the Heartland conference, Cato's Patrick Michaels inadvertently made that point when he argued that, though he believes climate change is happening, the real solution is to do nothing and wait for a technological miracle to rain down from the heavens. "Doing nothing *is* actually doing something," he proclaimed, assuring the audience that "technologies of the future" would save the day. His proof? "Two words: Shale gas.… That's what happens if you allow people to use their intellect, and their inquisitiveness, and their drive, in order to produce new energy sources." And of course the Heartland audience cheered earnestly for the intellectual breakthrough that is hydraulic fracturing (aka fracking) combined with

horizontal drilling, the technology that has finally allowed the fossil fuel industry to screw us sideways.[44]

And it's these "unconventional" methods of extracting fossil fuels that are the strongest argument for forceful regulation. Because one of the greatest misconceptions in the climate debate is that our society is refusing to change, protecting a status quo called "business-as-usual." The truth is that there is no business-as-usual. The energy sector is changing dramatically all the time—but the vast majority of those changes are taking us in precisely the wrong direction, toward energy sources with even higher planet-warming emissions than their conventional versions.

Take fracking. Natural gas's reputation as a clean alternative to coal and oil is based on emissions measurements from gas extracted through conventional drilling practices. But in April 2011, a new study by leading scientists at Cornell University showed that when gas is extracted through fracking, the emissions picture changes dramatically.[45]

The study found that methane emissions linked to fracked natural gas are at least 30 percent higher than the emissions linked to conventional gas. That's because the fracking process is leaky—methane leaks at every stage of production, processing, storage, and distribution. And methane is an extraordinarily dangerous greenhouse gas, thirty-four times more effective at trapping heat than carbon dioxide, based on the latest Intergovernmental Panel on Climate Change estimates. According to the Cornell study, this means that fracked gas has a greater greenhouse gas impact than oil and may well have as much of a warming impact as coal when the two energy sources are examined over an extended life cycle.[46]

Furthermore, Cornell biogeochemist Robert Howarth, the lead author of the study, points out that methane is an even more efficient trapper of heat in the first ten to fifteen years after it is released—indeed it carries a warming potential that is *eighty-six times* greater than that of carbon dioxide. And given that we have reached "decade zero," that matters a great deal. "It is in this shorter time frame that we risk locking ourselves into very rapid warming," Howarth explains, especially because huge liquid natural gas export terminals currently planned or being built in Australia, Canada, and the United States are not being constructed to function for only the next decade but for closer to the next half century. So, to put it bluntly, in the key period when we need to be looking for ways to cut our emissions rapidly, the global gas boom is in the process of constructing a network of ultra-powerful atmospheric ovens.[47]

The Cornell study was the first peer-reviewed research on the greenhouse gas footprint of shale production, including from methane emissions, and its lead author was quick to volunteer that his data were inadequate (largely due to the industry's lack of transparency). Still, the study was a bombshell, and though it remains controversial, a steady stream of newer work has bolstered the case for a high rate of methane leakage in the fracking process.[*48]

The gas industry isn't the only one turning to dirtier, higher-risk methods. Like Germany, the Czech Republic and Poland are increasingly relying on and expanding production of extra-dirty lignite coal.[49] And the major oil companies are rushing into various tar sands deposits, most notably in Alberta, all with significantly higher carbon footprints than conventional oil. They are also moving into ever deeper and icier waters for offshore drilling, carrying the risk of not just more catastrophic spills, as we saw with BP's Deepwater Horizon disaster, but spills that are simply impossible to clean up. Increasingly, these extreme extraction methods—blasting oil and gas out of rock, steaming oil out of tarlike dirt —are being used together, as when fracked natural gas is piped in to superheat the water that melts the bitumen in the tar sands, to cite just one example from the energy death spiral. What industry calls innovation, in other words, looks more like the final suicidal throes of addiction. We are blasting the bedrock of our continents, pumping our water with toxins, lopping off mountaintops, scraping off boreal forests, endangering the deep ocean, and scrambling to exploit the melting Arctic—all to get at the last drops and the final rocks. Yes, some very advanced technology is making this possible, but it's not innovation, it's madness.

The fact that fossil fuel companies have been permitted to charge into unconventional fossil fuel extraction over the past decade was not inevitable, but rather the result of very deliberate regulatory decisions—decisions to grant these companies permits for massive new tar sands and coal mines; to open vast swaths of the United States to natural gas fracking, virtually free from regulation and oversight; to open up new stretches of territorial waters and lift existing moratoriums on offshore drilling. These various decisions are a huge part of what is locking us into disastrous levels of planetary warming. These decisions, in turn, are the product of intense lobbying by the fossil fuel industry, motivated by the most powerful driver of them all: the will to survive.

As a rule, extracting and refining unconventional energy is a far more expensive and involved industrial process than doing the same for conventional fuels. So, for instance, Imperial Oil (of which Exxon owns a majority share) sank about $13 billion to open the sprawling Kearl open-pit mine in the Alberta tar sands. At two

hundred square kilometers, it will be one of the largest open-pit mines in Canada, more than three times the size of Manhattan. And it is only a fraction of the new construction planned for the tar sands: the Conference Board of Canada projects that a total of $364 billion will be invested through 2035.[50]

In Brazil, meanwhile, Britain's BG Group is expected to make a $30 billion investment over the next decade, much of it going into ultra-deepwater "subsalt" projects in which oil is extracted from depths of approximately three thousand meters (ten thousand feet). But the prize for fossil fuel lock-in surely goes to Chevron, which is spending a projected $54 billion on a gas development on Barrow Island, a "Class A Nature Reserve" off the northwest coast of Australia. The project will release so much natural gas from the earth that it is appropriately named Gorgon, after the terrifying, snake-haired female monster of Greek mythology. One of Chevron's partners in the project is Shell, which is reportedly spending an additional $10–12 billion to build the largest floating offshore facility ever constructed (longer than four soccer fields) in order to extract natural gas from a different location off the northwest coast of Australia.[51]

These investments won't be recouped unless the companies that made them are able to keep extracting for decades, since the up-front costs are amortized over the life of the projects. Chevron's Australia project is expected to keep producing natural gas for at least thirty years, while Shell's floating gas monstrosity is built to function on that site for up to twenty-five years. Exxon's Alberta mine is projected to operate for forty years, as is BP/Husky Energy's enormous Sunrise project, also in the tar sands. This is only a small sampling of mega-investments taking place around the world in the frantic scramble for hard-to-extract oil, gas, and coal. The long time frames attached to all these projects tell us something critical about the assumptions under which the fossil fuel industry is working: it is betting that governments are not going to get serious about emissions cuts for the next twenty-five to forty years. And yet climate experts tell us that if we want to have a shot at keeping warming below 2 degrees Celsius, then developed country economies need to have begun their energy turnaround by the end of this decade and to be almost completely weaned from fossil fuels before 2050.[52]

If the companies have miscalculated and we do get serious about leaving carbon in the ground, these huge projects will become what is known as "stranded assets"—investments that lose their projected value as a result of, for example, dramatic changes in environmental policy. When a company has a great deal of expensive stranded assets on its books, the stock market takes notice, and responds by bidding down the share price of the company that made these bad bets.

This problem goes well beyond a few specific projects and is integrated into the way that the market assigns value to companies that are in the business of extracting finite resources from the earth. In order for the value of these companies to remain stable or grow, oil and gas companies must always be able to prove to their shareholders that they have fresh carbon reserves to exploit after they exhaust those currently in production. This process is as crucial for extractive companies as it is for a company that sells cars or clothing to show their shareholders that they have preorders for their future products. At minimum, an energy company is expected to have as much oil and gas in its proven reserves as it does in current production, which would give it a "reserve-replacement ratio" of 100 percent. As the popular site Investopedia explains, "A company's reserve replacement ratio must be at least 100% for the company to stay in business long-term; otherwise, it will eventually run out of oil."[53]

Which is why investors tend to get quite alarmed when the ratio drops below that level. For instance, in 2009, on the same day that Shell announced that its reserve-replacement ratio for the previous year had ominously dipped to 95 percent, the company scrambled to reassure the market that it was not in trouble. It did this, tellingly, by declaring that it would cease new investments in wind and solar energy. At the same time, it doubled down on a strategy of adding new reserves from shale gas (accessible only through fracking), deepwater oil, and tar sands. All in all, Shell managed that year to add a record 3.4 billion barrels of oil equivalent in new proven reserves—nearly three times its production in 2009, or a reserve-replacement ratio of 288 percent. Its stock price went up accordingly.[54]

For a fossil fuel major, keeping up its reserve-replacement ratio is an economic imperative; without it, the company has no future. It has to keep moving just to stand still. And it is this structural imperative that is pushing the industry into the most extreme forms of dirty energy; there are simply not enough conventional deposits left to keep up the replacement ratios. According to the International Energy Agency's annual World Energy Outlook report, global conventional oil production from "existing fields" will drop from 68 million barrels per day in 2012 to an expected 27 million in 2035.[55]

That means that an oil company looking to reassure shareholders that it has a plan for what to do, say, when the oil in Alaska's Prudhoe Bay runs out, will be forced to go into higher-risk, dirtier territories. It is telling, for instance, that *more than half* of the reserves Exxon added in 2011 come from a single oil project: the massive Kearl mine being developed in the Alberta tar sands.[56] This imperative also means that, so long as this business model is in place, no coastline or aquifer

will be safe. Every victory against the fossil fuel companies, no matter how hard won, will be temporary, just waiting to be overtaken with howls of "Drill, Baby, Drill." It won't be enough even when we can walk across the Gulf of Mexico on the oil rigs, or when Australia's Great Barrier Reef is a parking lot for coal tankers, or when Greenland's melting ice sheet is stained black from a spill we have no idea how to clean up. Because these companies will always need more reserves to top up their replacement ratios, year after year after year.

From the perspective of a fossil fuel company, going after these high-risk carbon deposits is not a matter of choice—it is its fiduciary responsibility to shareholders, who insist on earning the same kinds of mega-profits next year as they did this year and last year. And yet fulfilling that fiduciary responsibility virtually guarantees that the planet will cook.

This is not hyperbole. In 2011, a think tank in London called the Carbon Tracker Initiative conducted a breakthrough study that added together the reserves claimed by all the fossil fuel companies, private and state-owned. It found that the oil, gas, and coal to which these players had already laid claim—deposits they have on their books and which were already making money for shareholders—represented 2,795 gigatons of carbon (a gigaton is 1 billion metric tons). That's a very big problem because we know roughly how much carbon can be burned between now and 2050 and still leave us a solid chance (roughly 80 percent) of keeping warming below 2 degrees Celsius. According to one highly credible study, that amount of carbon is 565 gigatons between 2011 and 2049. And as Bill McKibben points out, "The thing to notice is, 2,795 is five times 565. It's not even close." He adds: "What those numbers mean is quite simple. This industry has announced, in filings to the SEC and in promises to shareholders, that they're determined to burn five times more fossil fuel than the planet's atmosphere can begin to absorb."[57]

Those numbers also tell us that the very thing we must do to avert catastrophe—stop digging—is the very thing these companies cannot contemplate without initiating their own demise. They tell us that getting serious about climate change, which means cutting our emissions radically, is simply not compatible with the continued existence of one of the most profitable industries in the world.

And the amounts of money at stake are huge. The total amount of carbon in reserve represents roughly $27 trillion—more than ten times the annual GDP of the United Kingdom. If we were serious about keeping warming below 2 degrees, approximately 80 percent of that would be useless, stranded assets. Given these stakes, it is no mystery why the fossil fuel companies fight furiously to block every

piece of legislation that would point us in the right emissions direction, and why some directly fund the climate change denier movement.[58]

It also helps that these companies are so profitable that they have money not just to burn, but to bribe—especially when that bribery is legal. In 2013 in the United States alone, the oil and gas industry spent just under $400,000 *a day* lobbying Congress and government officials, and the industry doled out a record $73 million in federal campaign and political donations during the 2012 election cycle, an 87 percent jump from the 2008 elections.[59]

In Canada, corporations are not required to disclose how much money they spend on lobbying, but the number of times they communicate with public officials is a matter of public record. A 2012 report found that a single industry organization—the Canadian Association of Petroleum Producers—spoke with federal government officials 536 times between 2008 and 2012, while TransCanada, the company behind the Keystone XL pipeline, had 279 communications. The Climate Action Network, on the other hand, the country's broadest coalition devoted to emission reductions, only logged six communications in the same period. In the U.K., the energy industry met with the Department of Energy and Climate Change roughly eleven times more frequently than green groups did during David Cameron's first year in office. In fact, it has become increasingly difficult to discern where the oil and gas industry ends and the British government begins. As *The Guardian* reported in 2011, "At least 50 employees of companies including EDF Energy, npower and Centrica have been placed within government to work on energy issues in the past four years.… The staff are provided free of charge and work within the departments for secondments of up to two years."[60]

What all this money and access means is that every time the climate crisis rightfully triggers our collective self-preservation instinct, the incredible monetary power of the fossil fuel industry—driven by its own, more immediate self-preservation instinct—gets in the way. Environmentalists often speak about contemporary humanity as the proverbial frog in a pot ofboiling water, too accustomed to the gradual increases in heat to jump to safety. But the truth is that humanity has tried to jump quite a few times. In Rio in 1992. In Kyoto in 1997. In 2006 and 2007, when global concern rose yet again after the release of *An Inconvenient Truth* and with the awarding of the Nobel Peace Prize to Al Gore and the Intergovernmental Panel on Climate Change. In 2009, in the lead up to the United Nations climate summit in Copenhagen. The problem is that the money that

perverts the political process acts as a kind of lid, intercepting that survival instinct and keeping us all in the pot.

The influence wielded by the fossil fuel lobby goes a long way toward explaining why the sector is so very unconcerned about the nonbinding commitments made by politicians at U.N. climate summits to keep temperatures below 2 degrees Celsius. Indeed the day the Copenhagen summit concluded—when the target was made official—the share prices of some of the largest fossil fuel companies hardly reacted at all.[61]

Clearly, intelligent investors had determined that the promises governments made in that forum were nothing to worry about—that they were not nearly as important as the actions of their powerful energy departments back home that grant mining and drilling permits. Indeed in March 2014, ExxonMobil confirmed as much when the company came under pressure from activist shareholders to respond to reports that much of its reserves would become stranded assets if governments kept promises to keep warming below 2 degrees by passing aggressive climate legislation. The company explained that it had determined that restrictive climate policies were "highly unlikely" and, "based on this analysis, we are confident that none of our hydrocarbon reserves are now or will become 'stranded.' "[62]

Those working inside government understand these dynamics all too well. John Ashton, who served as special representative for climate change to three successive U.K. governments between 2006 and 2012, told me that he would often point out to his colleagues making energy policy that their approach to the development of fossil fuels contradicted the government's claim to be "running a 2 degree climate policy." But when he did, they "simply ignored my efforts and carried on as before—I might as well have been speaking in Attic Greek." From this Ashton concluded, "In government it is usually easy to rectify a slight misalignment between two policies but near impossible to resolve a complete contradiction. Where there is a contradiction, the forces of incumbency start with a massive advantage."[63]

This dynamic will shift only when the power (and wealth) of the fossil fuel industry is seriously eroded. Which is very tough to do: the handy thing about selling natural resources upon which entire economies have been built—and about having so far succeeded in blocking policies that would offer real alternatives—is that most people keep having to buy your products whether they like you or not. So since these companies are going to continue being rich for the foreseeable

future, the best hope of breaking the political deadlock is to radically restrict their ability to spend their profits buying, and bullying, politicians.

The good news for the climate movement is that there are a whole lot of other sectors that also have an active interest in curtailing the influence of money over politics, particularly in the U.S., the country that has been the most significant barrier to climate progress. After all, climate action has failed on Capitol Hill for the same reasons that serious financial sector reform didn't pass after the 2008 meltdown and the same reasons gun reform didn't pass after the horrific 2012 school shooting in Newtown, connecticut. Which in turn are the same reasons why Obama's health reform failed to take on the perverting influence of the medical insurance and pharmaceutical companies. All these attempts to fix glaring and fundamental flaws in the system have failed because large corporations wield far too much political power—a power exerted through corporate campaign contributions, many of them secret; through almost unfettered access to regulators via their lobbyists; through the notorious revolving door between business and government; as well as through the "free speech" rights these corporations have been granted by the U.S. Supreme Court. And though U.S. politics are particularly far gone in this regard, no Western democracy has a level playing field when it comes to political access and power.

Because these distortions have been in place for so long—and harm so many diverse constituencies—a great many smart people have done a huge amount of thinking about what it would take to clean up the system. As with responses to climate change, the problem is not an absence of "solutions"—the solutions are clear. Politicians must be prohibited from receiving donations from the industries they regulate, or from acceptingjobs in lieu of bribes; political donations need to be both fully disclosed and tightly capped; campaigns must be given the right to access the public airwaves; and, ideally, elections should be publicly funded as a basic cost of having a democracy.

Yet among large sections of the public, a sense of fatalism pervades: how can you convince politicians to vote for reforms designed to free them from the binds of corporate influence when those binds are still tightly in place? It's tough, to be sure, but the only thing politicians fear more than losing donations is losing elections. And this is where the power of climate change—and its potential for building the largest possible political tent—comes into play. As we have seen, the scientific warnings that we are running out of time to avert climate disaster are coming from a galaxy of credible scientific organizations and establishment international agencies—from the American Association for the Advancement of

Science to NASA to Britain's Royal Society to the Intergovernmental Panel on Climate Change to the U.S. National Academy of Sciences to the World Bank to the International Energy Agency. A resurgent climate movement could use those warnings to light a fire under the call to kick corporate money out of politics—not just fossil fuel money, but money from all the deep-pocketed barriers to progress from the National Rifle Association to the fast food industry to the private-prison complex. Such a rallying cry could bring together all of the various constituencies that would benefit from reducing corporate power over politics—from health care workers to parents worried about their children's safety at school. There are no guarantees that this coalition could succeed where other attempts at similar reforms have failed. But it certainly seems worth expending at least as much energy and money as the U.S. climate movement did trying, unsuccessfully, to push through climate legislation that it knew was wholly inadequate, precisely because it was written to try to neutralize opposition from fossil fuel companies (more on that later).

Not an "Issue," a Frame

The link between challenging corruption and lowering emissions is just one example of how the climate emergency could—by virtue of its urgency and the fact that it impacts, well, everyone on earth—breathe new life into a political goal for which there is already a great deal of public support. The same holds true for many of the other issues discussed so far—from raising taxes on the rich to blocking harmful new trade deals to reinvesting in the public sphere. But before those kinds of alliances can be built, some very bad habits will need to be abandoned.

Environmentalists have a long history of behaving as if no issue is more important than the Big One—why, some wonder (too often out loud), is everyone wasting their time worrying about women's rights and poverty and wars when it's blindingly obvious that none of this matters if the planet decides to start ejecting us for poor behavior? When the first Earth Day was declared in 1970, one of the movement's leaders, Democratic senator Gaylord Nelson, declared that the environmental crisis made "Vietnam, nuclear war, hunger, decaying cities, and all other major problems one could name … relatively insignificant by comparison." Which helps explains why the great radical journalist I. F. Stone described Earth Day as "a gigantic snowjob" that was using "rock and roll, idealism and

noninflammatory social issues to turn the youth off from more urgent concerns which might really threaten our power structure."[64]

They were both wrong. The environmental crisis—if conceived sufficiently broadly—neither trumps nor distracts from our most pressing political and economic causes: it supercharges each one of them with existential urgency. As Yotam Marom, an organizer with Occupy Wall Street in New York, wrote in July 2013, "The fight for the climate isn't a separate movement, it's both a challenge and an opportunity for *all* of our movements. We don't need to become climate activists, we *are* climate activists. We don't need a separate climate movement; we need to seize the climate *moment*."[65] The nature of the moment is familiar but bears repeating: whether or not industrialized countries begin deeply cutting our emissions this decade will determine whether we can expect the same from rapidly developing nations like China and India next decade. That, in turn, will determine whether or not humanity can stay within a collective carbon budget that will give us a decent chance of keeping warming below levels that our own governments have agreed are unacceptably dangerous. In other words, we don't have another couple of decades to talk about the changes we want while being satisfied with the occasional incremental victory. This set of hard facts calls for strategy, clear deadlines, dogged focus—all of which are sorely missing from most progressive movements at the moment.

Even more importantly, the climate moment offers an overarching narrative in which everything from the fight for good jobs to justice for migrants to reparations for historical wrongs like slavery and colonialism can all become part of the grand project of building a nontoxic, shockproof economy before it's too late.

And it is also worth remembering because it's so very easy to forget: the alternative to such a project is not the status quo extended indefinitely. It is climate-change-fueled disaster capitalism—profiteering disguised as emission reduction, privatized hyper-militarized borders, and, quite possibly, high-risk geoengineering when things spiral out of control.

So how realistic is it to imagine that the climate crisis could be a political game changer, a unifier for all these disparate issues and movements? Well, there is a reason hard-right conservatives are putting so much effort into denying its existence. Their political project is not, after all, as sturdy as it was in 1988, when climate change first pierced public consciousness. Free market ideology may still bind the imaginations of our elites, but for most of the general public, it has been drained of its powers to persuade. The disastrous track record of the past three decades of neoliberal policy is simply too apparent. Each new blast of statistics

about how a tiny band of global oligarchs controls half the world's wealth exposes the policies of privatization and deregulation for the thinly veiled license to steal that they always were. Each new report of factory fires in Bangladesh, soaring pollution in China, and water cut-offs in Detroit reminds us that free trade was exactly the race to the bottom that so many warned it would be. And each news story about an Italian or Greek pensioner who took his or her own life rather than try to survive under another round of austerity is a reminder of how many lives continue to be sacrificed for the few.

The failure of deregulated capitalism to deliver on its promises is why, since 2009, public squares around the world have turned into rotating semipermanent encampments of the angry and dispossessed. It's also why there are now more calls for fundamental change than at any point since the 1960s. It's why a challenging book like Thomas Piketty's *Capital in the Twenty-First Century*, exposing the built-in structures of ever-increasingwealth concentration, can sit atop bestseller lists for months, and why when comedian and social commentator Russell Brand went on the BBC and called for "revolution," his appearance attracted more than ten million YouTube views.[66]

Climate change pits what the planet needs to maintain stability against what our economic model needs to sustain itself. But since that economic model is failing the vast majority of the people on the planet on multiple fronts that might not be such a bad thing. Put another way, if there has ever been a moment to advance a plan to heal the planet that also heals our broken economies and our shattered communities, this is it.

Al Gore called climate change "an inconvenient truth," which he defined as an inescapable fact that we would prefer to ignore. Yet the truth about climate change is inconvenient only if we are satisfied with the status quo except for the small matter of warming temperatures. If, however, we see the need for transformation quite apart from those warming temperatures, then the fact that our current road is headed toward a cliff is, in an odd way, convenient—because it tells us that we had better start making that sweeping turn, and fast.

Not surprisingly, the people who understand this best are those whom our economic model has always been willing to sacrifice. The environmental justice movement, the loose network of groups working with communities on the toxic front lines of extractive industries—next to refineries, for instance, or downstream from mines—has always argued that a robust response to emission reduction could form the basis of a transformative economic project. In fact the slogan long

embraced by this movement has been "System Change, Not Climate Change"—a recognition that these are the two choices we face.[67]

"The climate justice fight here in the U.S. and around the world is not just a fight against the [biggest] ecological crisis of all time," Miya Yoshitani, executive director of the Oakland-based Asian Pacific Environmental Network (APEN), explains. "It is the fight for a new economy, a new energy system, a new democracy, a new relationship to the planet and to each other, for land, water, and food sovereignty, for Indigenous rights, for human rights and dignity for all people. When climate justice wins we win the world that we want. We can't sit this one out, not because we have too much to lose but because we have too much to gain.… We are bound together in this battle, not just for a reduction in the parts per million of CO_2, but to transform our economies and rebuild a world that we want today."[68]

This is what many liberal commentators get wrong when they assume that climate action is futile because it asks us to sacrifice in the name of far-off benefits. "How can you persuade the human race to put the future ahead of the present?" asked*Observer* columnist Nick Cohen despondently.[69] The answer is that you don't. You point out, as Yoshitani does, that for a great many people, climate action is their best hope for a better present, and a future far more exciting than anything else currently on offer.

Yoshitani is part of a vibrant activist scene in the San Francisco Bay Area that is ground zero of the green jobs movement most prominently championed by former Obama advisor Van Jones. When I first met Yoshitani, the Asian Pacific Environmental Network was working closely with Asian immigrants in Oakland to demand affordable housing close to a mass transit station to make sure that gentrification didn't displace the people who actually use subways and buses. And APEN has also been part of an initiative to help create worker co-ops in the solar energy sector in nearby Richmond, so that there are jobs on offer other than the ones at the local Chevron oil refinery.

More such connections between climate action and economic justice are being made all the time. As we will see, communities trying to stop dangerous oil pipelines or natural gas fracking are building powerful new alliances with Indigenous peoples whose territories are also at risk from these activities. And several large environmental organizations in the U.S.—including Greenpeace, the Sierra Club, the BlueGreen Alliance, and 350.org—took stands in support of demands for comprehensive reform of the U.S. immigration system, in part because migration is increasingly linked to climate and also because members of

immigrant communities are often prevented from defending themselves against heightened environmental risks since doing so could lead to incarceration or deportation.[70]

These are encouraging signs, and there are plenty of others. Yet the kind of counter-power that has a chance of changing society on anything close to the scale required is still missing. It is a painful irony that while the right is forever casting climate change as a left-wing plot, most leftists and liberals are still averting their eyes, having yet to grasp that climate science has handed them the most powerful argument against unfettered capitalism since William Blake's "dark Satanic Mills" blackened England's skies (which, incidentally, was the beginning of climate change). By all rights, this reality should be filling progressive sails with conviction, lending new confidence to the demands for a more just economic model. And yet when demonstrators are protesting the various failures of this system in Athens, Madrid, Istanbul, and New York, climate change is too often little more than a footnote when it could be the coup de grâce.[71]

The mainstream environmental movement, meanwhile, generally stands apart from these expressions of mass frustration, choosing to define climate activism narrowly—demanding a carbon tax, say, or even trying to stop a pipeline. And those campaigns are important. But building a mass movement that has a chance of taking on the corporate forces arrayed against science-based emission reduction will require the broadest possible spectrum of allies. That would include the public sector workers—firefighters, nurses, teachers, garbage collectors—fighting to protect the services and infrastructure that will be our best protection against climate change. It would include antipoverty activists trying to protect affordable housing in downtown cores, rather than allowing low-income people to be pushed by gentrification into sprawling peripheries that require more driving. As Colin Miller of Oakland-based Bay Localize told me, "Housing is a climate issue." And it would include transit riders fighting against fare increases at a time when we should be doing everything possible to make subways and buses more comfortable and affordable for all. Indeed when masses of people take to the streets to stop such fare hikes and demand free public transit—as they did in Brazil in June and July of 2013—these actions should be welcomed as part of a global effort to fight climate chaos, even if those populist movements never once use the words "climate change."[72]Perhaps it should be no surprise that a sustained and populist climate movement has not yet emerged—a movement like that has yet to be sustained to counter any of the other failures of this economic model. Yes, there have been periods when mass outrage in the face of austerity, corruption, and inequality has

spilled into the streets and the squares for weeks and months on end. Yet if the recent years of rapid-fire rebellions havedemonstrated anything, it is that these movements are snuffed out far too quickly, whether by repression or political cooptation, while the structures they opposed reconstitute themselves in more terrifying and dangerous forms. Witness Egypt. Or the inequalities that have grown even more obscene since the 2008 economic crisis, despite the many movements that rose up to resist the bailouts and austerity measures.

I have, in the past, strongly defended the right of young movements to their amorphous structures—whether that means rejecting identifiable leadership or eschewing programmatic demands. And there is no question that old political habits and structures must be reinvented to reflect new realities, as well as past failures. But I confess that the last five years immersed in climate science has left me impatient. As many are coming to realize, the fetish for structurelessness, the rebellion against any kind of institutionalization, is not a luxury today's transformative movements can afford.

The core of the problem comes back to the same inescapable fact that has both blocked climate action and accelerated emissions: all of us are living in the world that neoliberalism built, even if we happen to be critics of neoliberalism.

In practice that means that, despite endless griping, tweeting, flash mobbing, and occupying, we collectively lack many of the tools that built and sustained the transformative movements of the past. Our public institutions are disintegrating, while the institutions of the traditional left—progressive political parties, strong unions, membership-based community service organizations—are fighting for their lives.

And the challenge goes deeper than a lack of institutional tools and reaches into our very selves. Contemporary capitalism has not just accelerated the behaviors that are changing the climate. This economic model has changed a great many of us as individuals, accelerated and uprooted and dematerialized us as surely as it has finance capital, leaving us at once everywhere and nowhere. These are the hand-wringing clichés of our time—What is Twitter doing to my attention span? What are screens doing to our relationships?—but the preoccupations have particular relevance to the way we relate to the climate challenge.

Because this is a crisis that is, by its nature, slow moving and intensely place based. In its early stages, and in between the wrenching disasters, climate is about an early blooming of a particular flower, an unusually thin layer of ice on a lake, the late arrival of a migratory bird—noticing these small changes requires the kind of communion that comes from knowing a place deeply, not just as scenery but

also as sustenance, and when local knowledge is passed on with a sense of sacred trust from one generation to the next. How many of us still live like that? Similarly, climate change is also about the inescapable impact of the actions of past generations not just on the present, but on generations in the future. These time frames are a language that has become foreign to a great many of us. Indeed Western culture has worked very hard to erase Indigenous cosmologies that call on the past and the future to interrogate present-day actions, with long-dead ancestors always present, alongside the generations yet to come.

In short: more bad timing. Just when we needed to slow down and notice the subtle changes in the natural world that are telling us that something is seriously amiss, we have sped up; just when we needed longer time horizons to see how the actions of our past impact the prospects for our future, we entered into the never-ending feed of the perpetual now, slicing and dicing our attention spans as never before.

To understand how we got to this place of profound disconnection from our surroundings and one another, and to think about how we might build a politics based on reconnection, we will need to go back a good deal further than 1988. Because the truth is that, while contemporary, hyper-globalized capitalism has exacerbated the climate crisis, it did not create it. We started treating the atmosphere as our waste dump when we began using coal on a commercial scale in the late 1700s and engaged in similarly reckless ecological practices well before that.

Moreover, humans have behaved in this shortsighted way not only under capitalist systems, but under systems that called themselves socialist as well (whether they were or not remains a subject of debate). Indeed the roots of the climate crisis date back to core civilizational myths on which post-Enlightenment Western culture is founded—myths about humanity's duty to dominate a natural world that is believed to be at once limitless and entirely controllable. This is not a problem that can be blamed on the political right or on the United States; these are powerful cultural narratives that transcend geography and ideological divides.

I have, so far, emphasized the familiarity of many of the deep solutions to the climate crisis and there is real comfort to take from that. It means that in many of our key responses, we would not be embarking on this tremendous project from scratch but rather drawing on more than a century of progressive work. But truly rising to the climate challenge—particularly its challenge to economic growth—will require that we dig even deeper into our past, and move into some distinctly uncharted political territory.

[*] Workers in the U.S. and Europe have attempted to emulate this model in recent years during several plant closures, most notably the high-profile Republic Windows and Doors factory in Chicago, which was shut down during the economic crisis and then occupied by its workers. Today many of those former employees are now worker-owners at the reborn New Era Windows Cooperative.

[*] Much of the support for nuclear power as a solution to global warming is based on the promise of "next generation" nuclear technologies, which range from more efficient reactors cooled with gas instead of water, to "fast reactor" designs that can run on spent fuel or "breed" more fuel in addition to consuming it—or even nuclear fusion, in which atomic nuclei are forced together (as occurs in the sun) rather than split. Boosters of these groundbreaking technologies assure us that they eliminate many of the risks currently associated with nuclear energy, from meltdowns to longterm waste storage to weaponization of enriched uranium. And perhaps they do have the potential to eliminate some of those risks. But since these technologies are untested, and some may carry even greater risks, the onus is on the boosters, not on the rest of us, to demonstrate their safety. All the more so because we have *proven* clean, renewable technologies available, and democratic, participatory models for their implementation, that demand no such risks.

[*] There is a great deal of confusion about the climate benefits of natural gas because the fuel is often given credit for a 12 percent drop in U.S. carbon dioxide emissions since 2007. But this good news does not address the fact that methane emissions have been rising over the past decade, or the fact that U.S. methane emissions are very likely underestimated, since leakage has been extremely poorly accounted for. Moreover, many experts and modelers warn that any climate gains from the shale boom will continue to be undercut not only by potent methane emissions, but also by the tendency of cheap natural gas to displace wind and solar. Similarly, as coal generation is displaced by natural gas in the U.S., coal companies are simply exporting their dirty product overseas, which according to one analysis by the CO_2 Scorecard Group has "more than offset" the emissions savings from natural gas since 2007.

6

FRUITS, NOT ROOTS

The Disastrous Merger of Big Business and Big Green

"Our arguments must translate into profits, earnings, productivity, and economic incentives for industry."

–Former National Wildlife Federation President Jay Hair, 1987[1]

"I know this seems antithetical, but the bottom line here is not whether new coal-fired plants are built.… If the new coal plants are coming online under a cap that is bringing total emissions down, then it is not the worst thing in the world. Coal isn't the enemy. Carbon emissions are."

–Environmental Defense Fund President Fred Krupp, 2009[2]

Before the twentieth century, as many as a million Attwater's prairie chickens made their homes in the tall grasses along the coasts of Texas and Louisiana.[3] During mating season, they were quite a spectacle. To attract females, the males stomped their feet in little staccato motions, made loud, spooky cooing noises (known as "booming"), and inflated bright yellow air sacs on the sides of their necks, giving them the appearance of having swallowed two golden eggs.

But as the native prairie was turned into subdivisions and sliced up by oil and gas development, the Attwater's prairie chicken population began to crash. Local birders mourned the loss and in 1965, The Nature Conservancy—renowned for buying up ecologically important tracts of land and turning them into preserves—opened a Texas chapter. Early on, one of its major priorities was saving the Attwater's prairie chicken from extinction.[4]

It wasn't going to be easy, even for what would become the richest environmental organization in the world. One of the last remaining breeding grounds was located on 2,303 acres in southeast Texas on the shore of Galveston

Bay, a property that happened to be owned by Mobil (now ExxonMobil). The fossil fuel giant hadn't yet covered the land in oil and gas infrastructure, but there were active wells on its southern edge, closing in on the breeding grounds of the endangered bird. Then in 1995, came some surprisingly good news. Mobil was donating its Galveston Bay property to The Nature Conservancy —"the last best hope of saving one of the world's most endangered species," as the company put it. The conservancy, which named the land the Texas City Prairie Preserve, would make "the recovery of the Attwater's prairie chicken" its "highest priority." To all appearances, it was a shining conservation success story—proof that a non-confrontational, partnership-based approach to environmentalism could yield tangible results.[5] But four years later, something very strange happened. The Nature Conservancy began to do the very thing that its supporters thought it was there to prevent: it began extracting fossil fuels on the preserve. In 1999, the conservancy commissioned an oil and gas operator to sink a new gas well inside the preserve, which would send millions in revenue flowing directly into the environmental organization's coffers. And while the older oil and gas wells—those drilled before the land was designated a bird preserve—were mostly clustered far from the habitat of the Attwater's prairie chickens, that was decidedly not the case for the new well. According to Aaron Tjelmeland, the current manager of the preserve, the spot where the conservancy allowed drilling was relatively near the areas where the endangered birds nested, as well as performed their distinctive mating rituals. Of all the wells, this drilling pad was "the closest to where the prairie chickens normally hung out, or normally boomed," he said in an interview.[6]

For about three years, The Nature Conservancy's foray into the fossil fuel business attracted relatively little public controversy. That changed in 2002, when a piece in the *Los Angeles Times* exposed the drilling. For traditional conservationists, it was a little like finding out that Amnesty International had opened its own prison wing at Guantánamo. "They're exploiting the Attwater's prairie chicken to make money," fumed Clait E. Braun, then president of the Wildlife Society, and a leading expert on prairie chickens. Then, in May 2003, *The Washington Post* followed up with a scathing investigation into the organization's questionable land deals, delving deeper into the surprising fact that on the Texas City Prairie Preserve, one of the most respected environmental organizations in the United States was now moonlighting as a gas driller.[7]

The Nature Conservancy, sounding like pretty much everyone in the oil and gas business, insisted that, "We can do this drilling without harming the prairie chickens and their habitat."[8] But the track record on the preserve makes that far

from clear. In addition to the increased traffic, light, and noise that are part of any drilling operation, there were several points when drilling and wildlife preservation seemed to come into direct conflict. For instance, because Attwater's prairie chickens are so endangered, there is a public-private program that breeds them in captivity and then releases them into the wild, an initiative in which The Nature Conservancy was participating on the Texas City Prairie Preserve. But at one point early on in its drilling foray, a delay in the construction of a gas pipeline led the conservancy to postpone the release of the captive-bred chicks by three months—a dicey call because migrating raptors and other predators appear to have been waiting for them.[9]

The bird release that year was a disaster. According to an internal Nature Conservancy report, all seventeen of the chicks "died shortly after their delayed release." The science director of the Texas chapter wrote that the months of waiting had subjected the birds "to higher probability of death from raptor predation." According to *The Washington Post* report, by 2003 there were just sixteen Attwater's prairie chickens that The Nature Conservancy knew about on the preserve, down from thirty-six before the drilling began. Though top conservancy officials insisted that the birds had not been adversely affected by its industrial activities, it was a dismal record.[10] When I first came across the decade-old story, I assumed that The Nature Conservancy's extraction activities had stopped when they were exposed, since the revelation had ignited a firestorm of controversy and forced the organization to pledge not to repeat this particular fundraising technique. After the story broke, the organization's then president stated clearly, "We won't initiate any new oil, gas drilling, or mining of hard rock minerals on preserves that we own. We've only done that twice in 52 years but we thought, nonetheless, we should, for appearances' sake, not do that again."[11]

Turns out I was wrong. In fact, as of this book's writing, the conservancy was *still* extracting hydrocarbons on the Texas preserve that it rescued from Mobil back in 1995. In a series of communications, conservancy spokes-people insisted that the organization was required to continue fossil fuel extracting under the terms of the original drilling lease. And it's true that the 2003 pledge had been carefully worded, promising not to initiate "any new" drilling activities, and containing a proviso that it would honor "existing contracts."[12]

But The Nature Conservancy has not simply continued extracting for gas in that same well. A 2010 paper presented at a Society of Petroleum Engineers conference, and coauthored by two conservancy officials, reveals that the original well "died in March 2003, and was unable to flow due to excessive water

production," leading to the drilling of a replacement well in the same area in late 2007. It also turns out that while the original well was for gas, the new one is now producing only oil.[13]

Given that close to five years elapsed between the death of the Nature Conservancy's first well and the drilling of the replacement, it seems possible that the organization had the legal grounds to extricate itself from the original lease if it had been sufficiently motivated to do so. The lease I have seen states clearly that in the event that oil or gas production ever stops in a given "well tract," the operator has a 180-day window to begin "reworking" the well or to start drilling a new one. If it fails to do so, the lease for that area is automatically terminated. If The Nature Conservancy causes a delay in the operator's work—which the organization claims has regularly occurred, since it restricts drilling to a few months per year—then the 180-day window is extended by the equivalent amount of time. So, the organization insists that though it was "concerned" about initial plans for the new 2007 well, due to the proposed well's proximity to the Attwater's habitat, it believed it was "bound by the existing lease and required to permit the drilling of the replacement well," albeit in a different location. James Petterson, director of marketing strategies at the conservancy, told me that the organization had sought "an outside legal opinion from an oil and gas expert" that confirmed this view. Yet in an internal explanatory document on drilling entitled "Attwater's Prairie Chicken Background," the organization emphasizes that it maintains the power to control what can and cannot occur on the preserve. "Given the birds' endangered status," the document states, "no activity can take place that is deemed likely to harm the species." Petterson insists that "bird experts were consulted" and "nobody [here] would want to do anything to harm an endangered species, particularly one as endangered as the Attwater's Prairie Chicken … nobody is going to choose oil and gas development over the last remaining handful of birds on the planet."[14]

Regardless of whether the conservancy resumed drilling for oil in Texas because it had no choice or because it wanted to get the petro dollars flowing again after the initial controversy had died down, the issue has taken on new urgency of late. That's because, in November 2012, and with little fanfare, the last of the Attwater's prairie chickens disappeared from the Preserve. Aaron Tjelmeland, the preserve manager, said of the birds that there are "none that we know about." It is worth underlining this detail: under the stewardship of what *The New Yorker* describes as "the biggest environmental nongovernmental organization in the world"—boasting over one million members and assets of roughly $6 billion and operating in thirty-five countries—an endangered species has been completely wiped out

from one of its last remaining breeding grounds, on which the organization earned millions drilling for and pumping oil and gas. Amazingly, the website for the Texas City Prairie Preserve continues to boast that the "land management techniques the conservancy utilizes at the preserve are best practices that we export to other preserves." And though it mentions in passing that there are no more Attwater's prairie chickens on the land, it says nothing about its side business in oil and gas.[15]

The disappearance of the prairie chickens is no doubt the result of a combination of factors—invasive species, low numbers of captive-bred birds, drought (possibly linked to climate change), and the relatively small size of the reserve (the conservancy's preferred explanation). It's possible that the oil and gas drilling played no role at all. So let's set the birds aside for a moment. Even if a few had survived, and even if a few return in the future, the fact remains that The Nature Conservancy has been in the oil and gas business for a decade and half. That this could happen in the age of climate change points to a painful reality behind the environmental movement's catastrophic failure to effectively battle the economic interests behind our soaring emissions: large parts of the movement aren't actually fighting those interests—they have merged with them.

The Nature Conservancy, I should stress, is the only green group (that I know of, at least) to actually sink its own oil and gas wells. But it is far from the only group to have strong ties with the fossil fuel sector and other major polluters. For instance, Conservation International, The Nature Conservancy, and the Conservation Fund have all received money from Shell and BP, while American Electric Power, a traditional dirty-coal utility, has donated to the Conservation Fund and The Nature Conservancy. WWF (originally the World Wildlife Fund) has had a long relationship with Shell, and the World Resources Institute has what it describes as "a long-term, close strategic relationship with the Shell Foundation." Conservation International has partnerships with Walmart, Monsanto, Australian-based mining and petroleum giant BHP Billiton (a major extractor of coal), as well as Shell, Chevron, ExxonMobil, Toyota, McDonald's, and BP (according to *The Washington Post* BP has channeled $2 million to Conservation International over the years).[*] And that is the barest of samplings.[16]

The relationships are also more structural than mere donations and partnerships. The Nature Conservancy counts BP America, Chevron, and Shell among the members of its Business Council and Jim Rogers, chairman of the board and former CEO of Duke Energy, one of the largest U.S. coal-burning utilities, sits on the organization's board of directors (past board members include former CEOs of General Motors and American Electric Power).[17]

There is yet another way in which some green groups have entangled their fates with the corporations at the heart of the climate crisis: by investing their own money with them. For instance, while investigating The Nature Conservancy's foray into oil and gas drilling, I was struck by a line item in its 2012 financial statements: $22.8 million of the organization's endowment—one of the largest in the U.S.—was invested in "energy" companies (that figure has since gone up to $26.5 million). Energy, of course, means oil, gas, coal, and the like.* Curious, I soon discovered that most big conservation groups did not have policies prohibiting them from investing their endowments in fossil fuel companies. The hypocrisy is staggering: these organizations raise mountains of cash every year on the promise that the funds will be spent on work that is preserving wildlife and attempting to prevent catastrophic global warming. And yet some have turned around and invested that money with companies that have made it abundantly clear, through their reserves, that they intend to extract several times more carbon than the atmosphere can absorb with any degree of safety. It must be stated that these choices, made unilaterally by the top tier of leadership at the big green groups, do not represent the wishes or values of the millions of members who support them through donations or join genuinely community supported campaigns to clean up polluted rivers, protect beloved pieces of wilderness, or support renewables legislation. Indeed, many have been deeply alarmed to discover that groups they believed to be confronting polluters were in fact in business with them.[18]

There are, moreover, large parts of the green movement that have never engaged in these types of arrangements—they don't have endowments to invest or they have clear policies prohibiting fossil fuel holdings, and some have equally clear policies against taking donations from polluters. These groups, not coincidentally, tend also to be the ones with track records of going head-to-head with big oil and coal: Friends of the Earth and Greenpeace have been battling Shell's and Chevron's alleged complicity with horrific human rights abuses in the Niger Delta since the early 1990s (though Shell has agreed to pay out $15.5 million to settle a case involving these claims, it continues to deny wrongdoing, as does Chevron); Rainforest Action Network has been at the forefront of the international campaign against Chevron for the disaster left behind in the Ecuadorian Amazon; Food & Water Watch has helped secure big victories against fracking; 350.org helped launch the fossil fuel divestment movement and has been at the forefront of the national mobilization against the Keystone XL pipeline. The Sierra Club is a more complex case: it has also been a part of these campaigns and is the bane of the U.S.

coal industry—but between 2007 and 2010, the group secretly took millions from a natural gas company. But under new leadership—and facing pressure from the grass roots—it has cut ties with the fossil fuel sector.[19]

Even so, almost no one's hands are clean. That's because many of the top foundations that underwrite much of the environmental movement—including groups and projects with which I have been involved—come from fortunes, like the Rockefeller family's, that are linked with fossil fuels. And though these foundations do fund campaigns that confront big polluters most do not prohibit their own endowments from being invested with coal and oil. So, for example, the Ford Foundation, which has supported the Environmental Defense Fund and Natural Resources Defense Council (and helped support a film that is accompanying this book), reported in 2013 that it had nearly $14 million in Shell and BP stocks alone (another multimillion-dollar stock holding is Norway's Statoil).[20] In North America and Europe, it's virtually impossible to do public interest work of any scale—in academia or journalism or activism—without taking money of questionable origin, whether the origin is the state, corporations, or private philanthropy. And though more accountable grassroots movement financing models are desperately needed (and crowdfunding is a promising start), the fact of these financial ties is not what is particularly noteworthy, nor proof of some nefarious corruption. Where following the financial ties between funders and public interest work becomes relevant is when there is a compelling reason to believe that funding is having undue influence—shaping the kinds of research undertaken, the kinds of policies advanced, as well as the kinds of questions that get asked in the first place. And since it is generally accepted that fossil fuel money and conservative foundations have shaped the climate change denial movement, it seems fair to ask whether fossil fuel money and the values of centrist foundations have shaped parts of the movement that are in the business of proposing solutions. And there is a good deal of evidence that these ties have indeed had a decisive influence.

The big, corporate-affiliated green groups don't deny the reality of climate change, of course—many work hard to raise the alarm. And yet several of these groups have consistently, and aggressively, pushed responses to climate change that are the least burdensome, and often directly beneficial, to the largest greenhouse gas emitters on the planet—even when the policies come at the direct expense of communities fighting to keep fossil fuels in the ground. Rather than advancing policies that treat greenhouse gases as dangerous pollutants demanding clear, enforceable regulations that would restrict emissions and create the

conditions for a full transition to renewables, these groups have pushed convoluted market-based schemes that have treated greenhouse gases as late-capitalist abstractions to be traded, bundled, speculated upon, and moved around the globe like currency or subprime debt. And many of these same groups have championed one of the main fossil fuels—natural gas—as a supposed solution to climate change, despite mounting evidence that in the coming decades, the methane it releases, particularly through the fracking process, has the potential to help lock us into catastrophic levels of warming (as explained in chapter four). In some cases, large foundations have collaborated to explicitly direct the U.S. green movement toward these policies. Most infamously within the movement, a 2007 road map titled "Design to Win: Philanthropy's Role in the Fight Against Global Warming"—which was sponsored by six large foundations—advocated carbon trading as a response to climate change and supported both natural gas and expanded nuclear power. And as these policies were being turned into political campaigns, the message sent to green groups was essentially "step in line, or else you're not going to get your share of the money," recalls Jigar Shah, a renowned solar entrepreneur, former Greenpeace USA board member, and one-time director of the industry-focused Carbon War Room.[21]

The "market-based" climate solutions favored by so many large foundations and adopted by many greens have provided an invaluable service to the fossil fuel sector as a whole. For one, they succeeded in taking what began as a straightforward debate about shifting away from fossil fuels and put it through a jargon generator so convoluted that the entire climate issue came to seem too complex and arcane for nonexperts to understand, seriously undercutting the potential to build a mass movement capable of taking on powerful polluters. As Drexel University sociologist Robert Brulle has observed, "The movement to technical and market-based analyses as the core of reform environmentalism gutted whatever progressive vision"the movement had previously held. "Rather than engaging the broader public, reform environmentalism focuses debate among experts in the scientific, legal, and economic communities. It may provide technical solutions to specific problems but it neglects the larger social dynamics that underlie environmental degradation."[22]

These policies have also fed the false perception that a full transition to renewable energy is technically impossible—since if it were possible, why would all these well-meaning green groups be spending so much of their time pushing trading schemes and singing the praises of natural gas, even when extracted through the ecologically destructive method of fracking?

Often these compromises are rationalized according to the theory of "low-hanging fruit." This strategy holds, in essence, that it's hard and expensive to try to convince politicians to regulate and discipline the most powerful corporations in the world. So rather than pick that very tough fight, it's wiser and more effective to begin with something easier. Asking consumers to buy a more expensive, less toxic laundry detergent, for instance. Making cars more fuel-efficient. Switching to a supposedly cleaner fossil fuel. Paying an Indigenous tribe to stop logging a forest in Papua New Guinea to offset the emissions of a coal plant that gets to stay open in Ohio. With emissions up by about 57 percent since the U.N. climate convention was signed in 1992, the failure of this polite strategy is beyond debate. And yet still, at the upper echelons of the climate movement, our soaring emissions are never blamed on anything as concrete as the fossil fuel corporations that work furiously to block all serious attempts to regulate emissions, and certainly not on the economic model that demands that these companies put profit before the health of the natural systems upon which all life depends. Rather the villains are always vague and unthreatening—a lack of "political will," a deficit of "ambition"—while fossil fuel executives are welcomed at U.N. climate summits as key "partners" in the quest for "climate solutions."[23]

This upside-down world reached new levels of absurdity in November 2013 at the annual U.N. climate summit held in Warsaw, Poland. The gathering was sponsored by a panoply of fossil fuel companies, including a major miner of lignite coal, while the Polish government hosted a parallel "Coal & Climate Summit," which held up the dirtiest of all the fossil fuels as part of the battle against global warming. The official U.N. climate negotiation process gave its tacit endorsement of the coal event when its highest official—Christiana Figueres, executive secretary of the United Nations Framework Convention on Climate Change—agreed to deliver a keynote address to the gathering, defying calls from activists to boycott. "The summit's focus on continued reliance on coal is directly counter to the goal of these climate negotiations," said Alden Meyer of the Union of Concerned Scientists, "which is to dramatically reduce emissions of heat-trapping gases in order to avoid the worst impacts of climate change."[24]

A great many progressives have opted out of the climate change debate in part because they thought that the Big Green groups, flush with philanthropic dollars, had this issue covered. That, it turns out, was a grave mistake. To understand why, it's necessary to return, once again, to the epic case of bad historical timing that has plagued this crisis since the late eighties.

The Golden Age of Environmental Law

I. F. Stone may have thought that environmentalism was distracting the youth of the 1960s and early 1970s from more urgent battles, but by today's standards, the environmentalists of that era look like fire-breathing radicals. Galvanized by the 1962 publication of *Silent Spring* and the 1969 Santa Barbara oil spill (the Deepwater Horizon disaster of its day), they launched a new kind of North American environmentalism, one far more confrontational than the gentlemen's conservationism of the past.

In addition to the newly formed Friends of the Earth (created in 1969) and Greenpeace (launched in 1971), the movement also included groups like the Environmental Defense Fund, then an idealistic gang of scrappy scientists and lawyers determined to heed Rachel Carson's warnings. The group's unofficial slogan was, "Sue the bastards," and so they did. The EDF fought for and filed the original lawsuit that led to the U.S. ban on DDT as an insecticide, resulting in the revival of many species of birds, including the bald eagle.[25]

This was a time when intervening directly in the market to prevent harm was still regarded as a sensible policy option. Confronted with unassailable evidence of a grave collective problem, politicians across the political spectrum still asked themselves: "What can we do to stop it?" (Not: "How can we develop complex financial mechanisms to help the market fix it for us?")

What followed was a wave of environmental victories unimaginable by today's antigovernment standards. In the United States, the legislative legacy is particularly striking: the Clean Air Act (1963), the Wilderness Act (1964), the Water Quality Act (1965), the Air Quality Act (1967), the Wild and Scenic Rivers Act (1968), the National Environmental Policy Act (1970), the revised Clean Air Act (1970), the Occupational Safety and Health Act (1970), the Clean Water Act (1972), the Marine Mammal Protection Act (1972), the Endangered Species Act (1973), the Safe Drinking Water Act (1974), the Toxic Substances Control Act (1976), the Resource Conservation and Recovery Act (1976). In all, twenty-three federal environmental acts became law over the course of the 1970s alone, culminating in the Superfund Act in 1980, which required industry, through a small levy, to pay the cost of cleaning up areas that had become toxic.

These victories spilled over into Canada, which was also experiencing a flurry of environmental activism. The federal government passed its own Water Act (1970) and Clean Air Act (1971), and gave teeth to the nineteenth-century Fisheries Act a few years later, turning it into a powerful force for combating marine pollution and protecting habitats. Meanwhile, the European Community

declared environmental protection a top priority as early as 1972, laying the groundwork for its leadership in environmental law in the decades to follow. And in the wake of the U.N. Conference on the Human Environment in Stockholm that same year, the 1970s became a foundational decade for international environmental law, producing such landmarks as the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973), and the Convention on Long-Range Transboundary Air Pollution (1979).

Although robust environmental law would not begin to take hold in much of the developing world for another decade or so, direct environmental defense also intensified in the 1970s among peasant, fishing, and Indigenous communities across the Global South —the origins of what economist Joan Martínez Alier and others have described as the "environmentalism of the poor." This stretched from creative, women-led campaigns against deforestation in India and Kenya, to widespread resistance to nuclear power plants, dams, and other forms of industrial development in Brazil, Colombia, and Mexico.[26]

Simple principles governed this golden age of environmental legislation: ban or severely limit the offending activity or substance and where possible, get the polluter to pay for the cleanup. As journalist Mark Dowie outlines in his history of the U.S. environmental movement, *Losing Ground*, the real-world results of this approach were concrete and measurable. "Tens of millions of acres have been added to the federal wilderness system, environmental impact assessments are now required for all major developments, some lakes that were declared dead are living again.… Lead particulates have been impressively reduced in the atmosphere; DDT is no longer found in American body fat, which also contains considerably fewer polychlorinated biphenyls (PCBs) than it once did. Mercury has virtually disappeared from Great Lakes sediment; and Strontium 90 is no longer found in either cows' milk or mothers' milk." And Dowie stressed: "What all these facts have in common is that they are the result of outright bans against the use or production of the substances in question."[*27]

These are the tough tools with which the environmental movement won its greatest string of victories. But with that success came some rather significant changes. For a great many groups, the work of environmentalism stopped being about organizing protests and teach-ins and became about drafting laws, then suing corporations for violating them, as well as challenging governments for failing to enforce them. In rapid fashion, what had been a rabble of hippies became a movement of lawyers, lobbyists, and U.N. summit hoppers. As a result, many of

these newly professional environmentalists came to pride themselves on being the ultimate insiders, able to wheel and deal across the political spectrum. And so long as the victories kept coming, their insider strategy seemed to be working. Then came the 1980s. "A tree is a tree," Ronald Reagan famously said in the midst of a pitched battle over logging rights. "How many more do you need to look at?" With Reagan's arrival in the White House, and the ascendency of many think-tank ideologues to powerful positions in his administration, the goalposts were yanked to the right. Reagan filled his inner circle with pro-industry scientists who denied the reality of every environmental ill from acid rain to climate change. And seemingly overnight, banning and tightly regulating harmful industrial practices went from being bipartisan political practice to a symptom of "command and control environmentalism." Using messaging that would have fit right in at a Heartland conference three decades later, James Watt, Reagan's much despised interior secretary, accused greens of using environmental fears "as a tool to achieve a greater objective," which he claimed was "centralized planning and control of the society." Watt also warned darkly about where that could lead: "Look what happened to Germany in the 1930s. The dignity of man was subordinated to the powers of Nazism. The dignity of man was subordinated in Russia. Those are the forces that this thing can evolve into."[28]

For the Big Green groups, all this came as a rude surprise. Suddenly they were on the outside looking in, being red-baited by the kinds of people with whom they used to have drinks. Worse, the movement's core beliefs about the need to respond to environmental threats by firmly regulating corporations were being casually cast into the dustbin of history. What was an insider environmentalist to do?

Extreme 1980s Makeover

There were options, as there always are. The greens could have joined coalitions of unions, civil rights groups, and pensioners who were also facing attacks on hard-won gains, forming a united front against the public sector cutbacks and deregulation that was hurting them all. And they could have kept aggressively using the courts to sue the bastards. There was, throughout the 1980s, mounting public concern even among Republicans about Reagan's environmental rollbacks (which is how Planet Earth ended up on the cover of *Time* in early 1989).[*29]

And some did take up that fight. As Reagan launched a series of attacks on environmental regulations, there was resistance, especially at the local level, where

African American communities in particular were facing an aggressive new wave of toxic dumping. These urgent, health-based struggles eventually coalesced into the environmental justice movement, which held the First National People of Color Environmental Leadership Summit in October 1991, a historic gathering that adopted a set of principles that remains a movement touchstone to this day.[30] At the national and international levels, groups like Greenpeace continued to engage in direct action throughout the 1980s, though much of their energy was understandably focused on the perils of both nuclear energy and weapons.

But many green groups chose a very different strategy. In the 1980s, extreme free market ideology became the discourse of power, the language that elites were speaking to one another, even if large parts of the general public remained unpersuaded. That meant that for the mainstream green movement, confronting the antigovernment logic of market triumphalism head-on would have meant exiling themselves to the margins. And many of the big-budget green groups—having grown comfortable with their access to power and generous support from large, elite foundations—were unwilling to do that. Gus Speth, who co-founded the Natural Resources Defense Council and served as a top environmental advisor to Jimmy Carter during his presidency, described the problem like this: "We didn't adjust with Reagan. We kept working within a system but we should have tried to change the system and root causes."[31] (After years in high-level jobs inside the U.N. system and as a dean of Yale's School of Forestry and Environmental Studies, Speth has today thrown his lot in with the radicals, getting arrested to protest the Keystone XL pipeline and co-founding an organization questioning the logic of economic growth.) Part of what increased the pressure for ideological conformity in the 1980s was the arrival of several new groups on the environmental scene, competing for limited philanthropic dollars. These groups pitched themselves as modern environmentalists for the Reagan era: pro-business, non-confrontational, and ready to help polish even the most tarnished corporate logos. "Our approach is one of collaboration, rather than confrontation. We are creative, entrepreneurial, and partnership-driven. We don't litigate,"explains the Conservation Fund, founded in 1985. Two years later came Conservation International, which claims to have "single-handedly redefined conservation" thanks largely to a philosophy of working "with companies large and small to make conservation part of their business model."[32]

This open-for-business approach was so adept at attracting big donors and elite access that many older, more established green groups raced to get with the agreeable program, taking an "if you can't beat 'em, join 'em" attitude to brazen

extremes. It was in this period that the Nature Conservancy started loosening its definition of "preservation" so that conservation lands would eventually accommodate such dissonant activities as mansion building and oil drilling (laying the foundation for the group to get in on the drilling action itself). "I used to say that the only things not allowed on Nature Conservancy reserves were mining and slavery, and I wasn't sure about the latter," said Kierán Suckling of the Center for Biological Diversity. "Now I may have to withdraw the former as well."[33]

Indeed the pro-corporate conversion of large parts of the green movement in the 1980s led to deep schisms inside the environmental movement. Some activists grew so disillusioned with the willingness of the big groups to partner with polluters that they broke away from the mainstream movement completely. Some formed more militant, confrontation-oriented groups like Earth First!, whose members attempted to stop loggers with sabotage and direct action.

The debates, for the most part, took place behind the scenes but on April 23, 1990, they spilled into the headlines. It was the day after Earth Day—at that time an annual ritual of mass corporate greenwashing—and around one thousand demonstrators stormed the New York and the Pacific Stock Exchanges to draw attention to the "institutions responsible for much of the ecological devastation which is destroying the planet." Members of grassroots groups like the Love Canal Homeowners Association, the Bhopal Action Resource Group, and the National Toxics Campaign handed out pamphlets that read in part, "Who is destroying the earth—are we all equally to blame? No! We say go to the source. We say take it to Wall Street!" The pamphlets went on: "The polluters would have us believe that we are all just common travelers on Spaceship Earth, when in fact a few of them are at the controls, and the rest of us are choking on their exhaust."[34] This confrontational rhetoric—a foreshadowing of Occupy Wall Street two decades later, as well as the fossil fuel divestment movement—was an explicit critique of the corporate infiltration of the green movement. Daniel Finkenthal, a spokesperson for the anticorporate protests, declared, "Real environmental groups are disgusted with the corporate buyout of Earth Day," telling one journalist that sponsors are "spending more money on Earth Day promotion than they are on actual corporate reform and the environment."[35]

Climate Policy and the Price of Surrender

Of all the big green groups that underwent pro-business makeovers in the 1980s, none attracted more acrimony or disappointment than the Environmental Defense Fund, the once combative organization that had spent its early years translating Rachel Carson's ideas into action. In the mid-1980s, a young lawyer named Fred Krupp took the reins of the organization and he was convinced that the group's "sue the bastards" motto was so out of step with the times that it belonged at a garage sale next to dog-eared copies of *The Limits to Growth*. Under Krupp's leadership, which continues to this day, the EDF's new goal became: "creating markets for the bastards," as his colleague Eric Pooley would later characterize it.[36] And it was this transformation, more than any other, that produced a mainstream climate movement that ultimately found it entirely appropriate to have coal and oil companies sponsor their most important summits, while investing their own wealth with these same players.

The new era was officially inaugurated on November 20, 1986, when Krupp published a cocky op-ed in *The Wall Street Journal*. In it he announced that a new generation of pro-business environmentalists had arrived and with it "a new strategy in the movement." Krupp explained that his generation rejected the old-fashioned idea that "either the industrial economy wins or the environment wins, with one side's gain being the other's loss. The new environmentalism does not accept 'either-or' as inevitable and has shown that in many critical instances it is a fallacy." Rather than attempting to ban harmful activities, as Krupp's own organization had helped to do with DDT, the EDF would now form partnerships with polluters—or "coalitions of former enemies"—and persuade them that there are cost savings as well as new markets in going green. In time, Walmart, McDonald's, FedEx, and AT&T would all enjoy high-profile partnerships with this storied environmental pioneer.[37]

The group prided itself on putting "results" above ideology, but in truth Krupp's EDF was highly ideological—it's just that its ideology was the pro-corporate groupthink of the day, one that holds that private, market-based solutions are inherently superior to simple regulatory ones. A turning point came in 1988 when George H. W. Bush came to power promising action on acid rain. The old way of addressing the problem would have been straightforward: since sulfur dioxide emissions were the primary cause of acid rain, the solution would have been to require their reduction by a fixed amount across the board. Instead, the EDF pushed for the first full-fledged cap-and-trade system. These rules did not tell polluters that they had to cut their sulfur emissions but, instead, set a nationwide cap on

sulfur dioxide, beneath which big emitters like coal-fired power plants could do as they pleased—pay other companies to make reductions for them, purchase allowances permitting them to pollute as much as they had before, or make a profit by selling whatever permits they didn't use.[38]

The new approach worked and it was popular among foundations and private donors, particularly on Wall Street, where financiers were understandably attracted to the idea of harnessing the profit motive to solve environmental ills. Under Krupp's leadership, the EDF's annual budget expanded from $3 million to roughly $120 million. Julian Robertson, founder of the hedge fund Tiger Management, underwrote the EDF's work to the tune of $40 million, a staggering sum for a single benefactor.[*39] The Environmental Defense Fund has always insisted that it does not take donations from the companies with which it forms partnerships—that, writes EDF senior vice president for strategy and communications Eric Pooley, "would undermine our independence and integrity." But the policy doesn't bear much scrutiny. For instance, one of the EDF's flagship partnerships is with Walmart, with whom it collaborates to "make the company more sustainable." And it's true that Walmart doesn't donate to the EDF directly. However, the Walton Family Foundation, which is entirely controlled by members of the family that founded Walmart, gave the EDF $65 million between 2009 and 2013. In 2011, the foundation provided the group with nearly 15 percent of its funding. Meanwhile, Sam Rawlings Walton, grandson of Walmart founder Sam Walton, sits on the EDF's board of trustees (identified merely as "Boatman, Philanthropist, Entrepreneur" on the organization's website).[40]

The EDF claims that it "holds Walmart to the same standards we would any other company." Which, judging by Walmart's rather dismal environmental record since this partnership began—from its central role in fueling urban sprawl to its steadily increasing emissions—is not a very high standard at all.[41]

Nor is the Environmental Defense Fund the only environmental organization to have benefited from the Walton family's largesse. Their foundation is one of the top green funders, handing out more than $71 million in grants for environmental causes in 2011, with about half of the money going to the EDF, Conservation International, and the Marine Stewardship Council. All have partnerships with Walmart, whether to lower emissions, stamp an eco label on some of the seafood the company sells, or to co-launch a line of "mine to market" jewelry. Stacy Mitchell, a researcher with the Institute for Local Self-Reliance, observes that having large parts of the green movement so dependent on the scions of a company that almost singlehandedly supersized the retail sector and exported the model

around the world has had profound political implications. "Walmart's money is exerting significant influence in setting the agenda, defining the problems, and elevating certain kinds of approaches—notably those that reinforce, rather than challenge, the power of large corporations in our economy and society," she writes.[42] And this is the heart of the issue—not simply that a group that gets a large portion of its budget from the Walton family fortune is unlikely to be highly critical of Walmart. The 1990s was the key decade when the contours of the climate battle were being drawn—when a collective strategy for rising to the challenge was developed and when the first wave of supposed solutions was presented to the public. It was also the period when Big Green became most enthusiastically pro-corporate, most committed to a low-friction model of social change in which everything had to be "win-win." And in the same period many of the corporate partners of groups like the EDF and the Nature Conservancy—Walmart, FedEx, GM—were pushing hard for the global de-regulatory framework that has done so much to send emissions soaring.

This alignment of economic interests—combined with the ever powerful desire to be seen as "serious" in circles where seriousness is equated with toeing the pro-market line—fundamentally shaped how these green groups conceived of the climate challenge from the start. Global warming was not defined as a crisis being fueled by overconsumption, or by high emissions industrial agriculture, or by car culture, or by a trade system that insists that vast geographical distances do not matter—root causes that would have demanded changes in how we live, work, eat, and shop. Instead, climate change was presented as a narrow technical problem with no end of profitable solutions within the market system, many of which were available for sale at Walmart.[*]

The effect of this "bounding of the debate," as the Scottish author and environmentalist Alastair McIntosh describes it, reaches far beyond a few U.S. groups. "In my experience," writes McIntosh, "most international climate change agency personnel take the view that 'we just can't go there' in terms of the politics of cutting consumerism." This is usually framed as an optimistic faith in markets, but in fact it "actually conceals pessimism because it keeps us in the displacement activity of barking up the wrong tree. It is an evasion of reality, and with it, the need to fundamentally appraise the human condition in order to seek the roots of hope."[43] Put another way, the refusal of so many environmentalists to consider responses to the climate crisis that would upend the economic status quo forces them to place their hopes in solutions—whether miracle products, or carbon markets, or "bridge fuels"—that are either so weak or so high-risk that entrusting

them with our collective safety constitutes what can only be described as magical thinking. I do not question the desire on the part of these self-styled pragmatists to protect the earth from catastrophic warming. But between the Heartlanders who recognize that climate change is a profound threat to our economic and social systems and therefore deny its scientific reality, and those who claim climate change requires only minor tweaks to business-as-usual and therefore allow themselves to believe in its reality, it's not clear who is more deluded.

Shopping Our Way Out of It

For a few years around the 2006 release of Al Gore's *An Inconvenient Truth*, it seemed as if climate change was finally going to inspire the transformative movement of our era. Public belief in the problem was high, and the issue seemed to be everywhere. Yet on looking back on that period, what is strange is that all the energy seemed to be coming from the very top tier of society. In the first decade of the new millennium, climate talk was a strikingly elite affair, the stuff of Davos panels and gee-whiz TED Talks, of special green issues of *Vanity Fair* and celebrities arriving at the Academy Awards in hybrid cars. And yet behind the spectacle, there was virtually no discernible movement, at least not of the sort that anyone involved in the civil rights, antiwar, or women's movements would recognize. There were few mass marches, almost no direct action beyond the occasional media-friendly stunt, and no angry leaders (other than a former vice president of the United States).

In a sense, the period represented a full-circle return to the gentlemen's clubhouse in which the conservation movement began, with Sierra Club cofounder John Muir persuading President Theodore Roosevelt to save large parts of Yosemite while the two men talked around the bonfire on a camping trip. And though the head of Conservation International did not go camping on the melting glaciers with George W. Bush in order toimpress upon him the reality of climate change, there were plenty of postmodern equivalents, including celebrity-studded eco-cruises that allowed Fortune 500 CEOs to get a closer look at endangered coral reefs. It wasn't that there was no role for the public. We were called upon periodically to write letters, sign petitions, turn off our lights for an hour, make a giant human hourglass that could be photographed from the sky. And of course we were always asked to send money to the Big Green groups that were supposedly just on the cusp of negotiating a solution to climate change on our behalf. But most

of all, regular, noncelebrity people were called upon to exercise their consumer power—not by shopping less but by discovering new and exciting ways to consume more.* And if guilt set in, well, we could click on the handy carbon calculators on any one of dozens of green sites and purchase an offset, and our sins would instantly be erased.[44]

In addition to not doing much to actually lower emissions, these various approaches also served to reinforce the very "extrinsic" values that we now know are the greatest psychological barriers to climate action—from the worship of wealth and fame for their own sakes to the idea that change is something that is handed down from above by our betters, rather than something we demand for ourselves. They may even have played a role in weakening public belief in the reality of human-caused climate change. Indeed a growing number of communications specialists now argue that because the "solutions" to climate change proposed by many green groups in this period were so borderline frivolous, many people concluded that the groups must have been exaggerating the scale of the problem. After all, if climate change really was as dire as Al Gore argued it was in *An Inconvenient Truth*, wouldn't the environmental movement be asking the public to do more than switch brands of cleaning liquid, occasionally walk to work, and send money? Wouldn't they be trying to shut down the fossil fuel companies?

"Imagine that someone came up with a brilliant new campaign against smoking. It would show graphic images of people dying of lung cancer followed by the punch line: 'It's easy to be healthy—smoke one less cigarette a month.' We know without a moment's reflection that this campaign would fail," wrote British climate activist and author George Marshall. "The target is so ludicrous, and the disconnection between the images and the message is so great, that most smokers would just laugh it off."[45]

It would be one thing if, while individuals were being asked to voluntarily "green" the minutiae of their lives, the Big Green NGOs had simultaneously gone after the big polluters, demanding that they match our individual small cuts in carbon emissions with large-scale, industry-wide reductions. And some did. But many of the most influential green groups did precisely the opposite. Not only did they help develop complex financial mechanisms to allow these corporations to keep emitting, they also actively campaigned to expand the market for one of the three main fossil fuels.

Fracking and the Burning Bridge

The gas industry itself came up with the pitch that it could be a "bridge" to a clean energy future back in the early 1980s. Then in 1988, with climate change awareness breaking into the mainstream, the American Gas Association began to explicitly frame its product as a response to the "greenhouse effect."[46]

In 1992, a coalition of progressive groups—including the Natural Resources Defense Council, Friends of the Earth, Environmental Action, and Public Citizen—officially embraced the idea, presenting a "Sustainable Energy Blueprint" to the incoming administration of Bill Clinton that included a significant role for natural gas. The NRDC was a particularly strong advocate, going on to call natural gas "the bridge to greater reliance on cleaner and renewable forms of energy."[47] And at the time, it seemed to make a good deal of sense: renewable technology was less mature than it is now, and the gas in question was being extracted through conventional drilling methods. Today, the landscape has shifted dramatically on both counts. Renewable technologies have become radically more efficient and affordable, making a full transition to the power they provide both technologically and economically possible within the next few decades. The other key change is that the vast majority of new gas projects in North America rely on hydraulic fracturing—not conventional drilling—and fracking-based exploration and production are on the rise around the world.[48]

These developments have significantly weakened the climate case for natural gas—especially fracked natural gas. We now know that fracked natural gas may leak enough methane to make its warming impact, especially in the near term, comparable to that of coal. Anthony Ingraffea, who coauthored the breakthrough Cornell study on methane leakage and describes himself as "a longtime oil and gas engineer who helped develop shale fracking techniques for the Energy Department," wrote in *The New York Times*, "The gas extracted from shale deposits is not a 'bridge' to a renewable energy future—it's a gangplank to more warming and away from clean energy investments."[49]

We also know, from experience in the U.S., that cheap and abundant natural gas doesn't replace only coal but also potential power from renewables. This has led the Tyndall Centre's Kevin Anderson to conclude, "If we are serious about avoiding dangerous climate change, the only safe place for shale gas remains in the ground." Biologist Sandra Steingraber of New Yorkers Against Fracking puts the stark choice like this: we are "standing at an energy crossroads. One signpost points to a future powered by digging fossils from the ground and lighting them

on fire. The other points to renewable energy. You cannot go in both directions at once. Subsidizing the infrastructure for one creates disincentives for the other."[50]

Even more critically, many experts are convinced that we do not need unconventional fuels like fracked gas to make a full transition to renewables. Mark Z. Jacobson, the Stanford engineering professor who coauthored the road map for reaching 100 percent renewable energy by 2030, says that conventional fossil fuels can power the transition and keep the lights on in the meantime. "We don't need unconventional fuels to produce the infrastructure to convert to entirely clean and renewable wind, water, and solar power for all purposes. We can rely on the existing infrastructure plus the new infrastructure [of renewable generation] to provide the energy for producing the rest of the clean infrastructure that we'll need," he said in an interview, adding, "Conventional oil and gas is much more than enough."[51] How have the Big Green groups responded to this new information? Some, like the NRDC, have cooled off from their earlier support, acknowledging the risks and pushing for tougher regulations while still advocating natural gas as a replacement for coal and other dirty fuels. But others have chosen to dig in even deeper. The Environmental Defense Fund and the Nature Conservancy, for example, have responded to revelations about the huge risks associated with natural gas by undertaking a series of initiatives that give the distinct impression that fracking is on the cusp of becoming clean and safe. And as usual, much of the funding for this work has strong links to the fossil fuel sector.

The Nature Conservancy, for its part, has received hundreds of thousands of dollars from JP Morgan to come up with voluntary rules for fracking. JP Morgan, unsurprisingly, is a leading financier of the industry, with at least a hundred major clients who frack, according to the bank's top environmental executive, Matthew Arnold. ("We are number one or number two in any given year in the oil and gas industry worldwide," Arnold told*The Guardian* in February 2013.) The conservancy also has a high-profile partnership with BP in Wyoming's Jonah Field, a huge fracking-for-gas operation in an area rich with vulnerable wildlife. The Nature Conservancy's job has been to identify habitat preservation and conservation projects to "offset the impacts of oil and gas drilling pads and infrastructure." From a climate change perspective, this is an absurd proposition, since these projects have no hope of offsetting the most damaging impact of all: the release of heat-trapping gases into the atmosphere. Which is why the most important preservation work that any environmental group can do is preserving the carbon in the ground, wherever it is. (Then again, this is The Nature Conservancy, which has its very own gas well in the middle of a nature preserve in Texas).[52]

Similarly, the EDF has teamed up with several large energy companies to open the Center for Sustainable Shale Development (CSSD)—and as many have pointed out, the very name of the center makes it clear that it will not be questioning whether "sustainable" extraction of fossil fuels from shale is possible in the age of climate change. The center has advanced a set of voluntary industry standards that its members claim will gradually make fracking safer. But as then–Demos senior policy analyst J. Mijin Cha pointed out, "The Center's new standards … are not enforceable. If anything, they provide cover for oil and gas interests that want to derail the transition to a clean economy powered by renewable energy."[53]

One of the center's key funders is the Heinz Endowments, which as it turns out, was no disinterested party. A June 2013 investigation by the Public Accountability Initiative reported that, "The Heinz Endowments, has significant, undisclosed ties to the natural gas industry.… Heinz Endowments president Robert F. Vagt is currently a director at Kinder Morgan, a natural gas pipeline company, and owns more than $1.2 million in company stock. This is not disclosed on the Heinz Endowments website or the website of CSSD, where Vagt serves as a director. Kinder Morgan has cited increased regulation of fracking as a key business risk in recent corporate filings." (After the controversy broke, Heinz Endowments appeared to move away from some of its earlier pro-gas positions and went through a significant staffing shakeup, including the resignation of Vagt as foundation president in early 2014.)[54]

The EDF has also received a $6 million grant from the foundation of New York's billionaire ex-mayor Michael Bloomberg (who is strongly pro-fracking), specifically to develop and secure regulations intended to make fracking safe—once again, not to impartially assess whether such an outcome is even possible. And Bloomerg is no impartial observer in all this. The former mayor's personal and philanthropic fortune—worth over $30 billion—is managed by investment firm Willett Advisors, which was established by Bloomberg and his associates. According to *Bloomberg Businessweek*, and confirmed by Bloomberg Philanthropies (which shares a building with the firm), Willett "invests in real assets focusing on oil and natural gas areas." Michael Bloomberg did not respond to repeated requests for comment.[55] The EDF has done more than help the fracking industry appear to be taking environmental concerns seriously. It also led research that has been used to counter claims that high methane leakage disqualifies fracked natural gas as a climate solution. The EDF has partnered with Shell, Chevron, and other top energy companies on one in a series of studies on methane leaks with the clear goal, as one EDF official put it, of helping "natural gas to be an accepted part

of a strategy for improving energy security and moving to a clean energy future." When the first study arrived in September 2013, published in *Proceedings of the National Academy of Sciences*, it made news by identifying fugitive methane leakage rates from gas extraction that were ten to twenty times lower than those in most other studies to date.[56]

But the study's design contained serious limitations, the most glaring of which was allowing the gas companies to choose the wells they wanted inspected. Robert Howarth, the lead author of the breakthrough 2011 Cornell study on the same subject, pointed out that the EDF's findings were "based only on evaluation of sites and times chosen by industry," and that the paper "must be viewed as a best-case scenario," rather than a reflection of how the industry functions as a whole. He added, "The gas industry can produce gas with relatively low emissions, but they very often do not do so. They do better when they know they are being carefully watched." These concerns, however, were entirely upstaged by the priceless headlines inspired by the Environmental Defense Fund study: "Study: Leaks at Natural Gas Wells Less Than Previously Thought" (*Time*); "Study: Methane Leaks from Gas Drilling Not Huge" (Associated Press); "Fracking Methane Fears Overdone" (*The Australian*); and so on.[57]

The result of all this has been a great deal of public uncertainty. Is fracking safe after all? Is it about to become safe? Is it clean or dirty? Like the well-understood strategy of sowing doubts about the science of climate change, this confusion effectively undermines the momentum away from fossil fuels and toward renewable energy. As Josh Fox, the director of the Academy Award–nominated documentary on fracking, *Gasland*, puts it: "I think that what's happening here is a squandering of the greatest political will that we've ever had towards getting off of fossil fuels."[58] Because while green groups battle over the research and voluntary codes, the gas companies are continuing to drill, leak, and pour billions of dollars into new infrastructure designed to last for many decades.

Trading in Pollution

When governments began negotiating the international climate treaty that would become the Kyoto Protocol, there was broad consensus about what the agreement needed to accomplish. The wealthy, industrialized countries responsible for the lion's share of historical emissions would have to lead by capping their emissions at a fixed level and then systematically reducing them. The European Union and

developing countries assumed that governments would do this by putting in place strong domestic measures to reduce emissions at home, for example by taxing carbon, and beginning a shift to renewable energy.

But when the Clinton administration came to the negotiations, it proposed an alternate route: create a system of international carbon trading modeled on the cap-and-trade system used to address acid rain (in the runup to Kyoto, the EDF worked closely on the plan with Al Gore's office).[59] Rather than straightforwardly requiring all industrialized countries to lower their greenhouse gas emissions by a fixed amount, the scheme would issue pollution permits, which they could use, sell if they didn't need them, or purchase so that they could pollute more. National programs would be set up so that companies could similarly trade these permits, with the country staying within an overall emissions cap. Meanwhile, projects that were employing practices that claimed to be keeping carbon out of the atmosphere—whether by planting trees that sequester carbon, or by producing low carbon energy, or by upgrading a dirty factory to lower its emissions—could qualify for carbon credits. These credits could be purchased by polluters and used to offset their own emissions.

The U.S. government was so enthusiastic about this approach that it made the inclusion of carbon trading a deal breaker in the Kyoto negotiations. This led to what France's former environment minister Dominique Voynet described as "radically antagonistic" conflicts between the United States and Europe, which saw the creation of a global carbon market as tantamount to abandoning the climate crisis to "the law of the jungle." Angela Merkel, then Germany's environment minister, insisted, "The aim cannot be for industrialized countries to satisfy their obligations solely through emissions trading and profit."[60]

It is one of the great ironies of environmental history that the United States—after winning this pitched battle at the negotiating table—would fail to ratify the Kyoto Protocol, and that the most important emissions market would become a reality in Europe, where it was opposed from the outset. The European Union's Emissions Trading System (ETS) was launched in 2005 and would go on to become closely integrated with the United Nations' Clean Development Mechanism (CDM), which was written into the Kyoto Protocol. At least initially, the markets seemed to take off. From 2005 through 2010, the World Bank estimates that the various carbon markets around the globe saw over $500 billion in trades (though some experts believe those estimates are inflated). Huge numbers of projects around the world, meanwhile, are generating carbon credits—the CDM alone had an estimated seven-thousand-plus registered projects in early 2014.[61]

But it didn't take long for the flaws in the plan to show. Under the U.N. system, all kinds of dodgy industrial projects can generate lucrative credits. For instance, oil companies operating in the Niger Delta that practice "flaring"—setting fire to the natural gas released in the oil drilling process because capturing and using the potent greenhouse gas is more expensive than burning it—have argued that they should be paid if they stop engaging in this enormously destructive practice. And indeed some are already registered to receive carbon credits under the U.N. system for no longer flaring—despite the fact that gas flaring has been illegal in Nigeria since 1984 (it's a law filled with holes and is largely ignored).[62] Even a highly polluting factory that installs a piece of equipment that keeps a greenhouse gas out of the atmosphere can qualify as "green development" under U.N. rules. And this, in turn, is used to justify more dirty emissions somewhere else.

The most embarrassing controversy for defenders of this model involves coolant factories in India and China that emit the highly potent greenhouse gas HFC-23 as a by-product. By installing relatively inexpensive equipment to destroy the gas (with a plasma torch, for example) rather than venting it into the air, these factories—most of which produce gases used for air-conditioning and refrigeration—have generated tens of millions of dollars in emission credits every year. The scheme is so lucrative, in fact, that it has triggered a series of perverse incentives: in some cases, companies can earn twice as much by destroying an unintentional by-product as they can from making their primary product, which is itself emissions intensive. In the most egregious instance of this, selling carbon credits constituted a jaw-dropping 93.4 percent of one Indian firm's total revenues in 2012.[63]

According to one group that petitioned the U.N. to change its policies on HFC-23 projects, there is "overwhelming evidence that manufacturers are gaming" the system "by producing more potent greenhouse gases just so they can get paid to destroy them."[64] But it gets worse: the primary product made by these factories is a type of coolant that is so damaging to the ozone that it is being phased out under the Montreal Protocol on ozone depletion.

And this is not some marginal piece of the world emissions market—as of 2012, the U.N. system awarded these coolant manufacturers its largest share of emission credits, more than any genuinely clean energy projects.[65] Since then, the U.N. has enacted some partial reforms, and the European Union has banned credits from these factories in its carbon market.

It should hardly be surprising that so many questionable offset projects have come to dominate the emissions market. The prospect of getting paid real money

based on projections of how much of an invisible substance is kept out of the air tends to be something of a scam magnet. And the carbon market has attracted a truly impressive array of grifters and hustlers who scour biologically rich but economically poor nations like Papua New Guinea, Ecuador, and Congo, often preying on the isolation of Indigenous people whose forests can be classified as offsets. These carbon cowboys, as they have come to be called, arrive bearing aggressive contracts (often written in English, with no translation) in which large swaths of territory are handed over to conservation groups on the promise of money for nothing. In the bush of Papua New Guinea, carbon deals are known as "sky money"; in Madagascar, where the promised wealth has proved as ephemeral as the product being traded, the Betsimisaraka people talk of strangers who are "selling the wind."[66]

A notorious carbon cowboy is Australian David Nilsson, who runs a particularly fly-by-night operation; in one recent incarnation, his carbon credit enterprise reportedly consisted only of an answering service and a web domain. After Nilsson tried to convince the Matsés people in Peru to sign away their land rights in exchange for promises of billions in revenues from carbon credits, a coalition of Indigenous people in the Amazon Basin called for Nilsson to be expelled from the country. And they alleged that Nilsson's pitch was "similar to 100 other carbon projects" which were "dividing our people with non-existent illusions of being millionaires."[*] Some Indigenous leaders even say that it is easier to deal with big oil and mining companies, because at least people understand who these companies are and what they want; less so when the organization after your land is a virtuous-seeming NGO and the product it is trying to purchase is something that cannot be seen or touched.[67]

This points to a broader problem with offsets, one that reaches beyond the official trading systems and into a web of voluntary arrangements administered by large conservation groups in order to unofficially "offset" the emissions of big polluters. Particularly in the early days of offsetting, after forest conservation projects began appearing in the late 1980s and early 1990s, by far the most persistent controversy was that—in the effort to quantify and control how much carbon was being stored so as to assign a monetary value to the standing trees—the people who live in or near those forests were sometimes pushed onto reservation-like parcels, locked out of their previous ways of life.[68] This locking out could be literal, complete with fences and armed men patrolling the territory looking for trespassers. The NGOs claim that they were merely attempting to

protect the resources and the carbon they represented, but all this was seen, quite understandably, as a form of land grabbing.

For instance, in Paraná, Brazil, at a project providing offsets for Chevron, GM, and American Electric Power and administered by The Nature Conservancy and a Brazilian NGO, Indigenous Guarani were not allowed to forage for wood or hunt in the places they'd always occupied, or even fish in nearby waterways. As one local put it, "They want to take our home from us." Cressant Rakotomanga, president of a community organization in Madagascar where the Wildlife Conservation Society is running an offset program, expressed a similar sentiment. "People are frustrated because before the project, they were completely free to hunt, fish and cut down the forests."[69]

Indeed the offset market has created a new class of "green" human rights abuses, wherein peasants and Indigenous people who venture into their traditional territories (reclassified as carbon sinks) in order to harvest plants, wood, or fish are harassed or worse. There is no comprehensive data available about these abuses, but the reported incidents are piling up. Near Guaraqueçaba, Brazil, locals have reported being shot at by park rangers while they searched the forest for food and plants inside the Paraná offset project hosted by The Nature Conservancy. "They don't want human beings in the forest," one farmer told the investigative journalist Mark Schapiro. And in a carbon-offset tree-planting project in Uganda's Mount Elgon National Park and Kibale National Park, run by a Dutch organization, villagers described a similar pattern of being fired upon and having their crops uprooted.[70]

In the wake of such reports, some of the green groups involved in offsetting now stress their dedication to Indigenous rights. However, dissatisfaction remains and controversies continue to crop up. For example, in the Bajo Aguán region of Honduras, some owners of palm oil plantations have been able to register a carbon offset project that claims to capture methane. Spurred by the promise of cash for captured gas, sprawling tree farms have displaced local agriculture, leading to a violent cycle of land occupations and evictions that has left as many as a hundred local farmers and their advocates dead as of 2013. "The way we see it, it has become a crime to be a farmer here," says Heriberto Rodríguez of the Unified Campesino Movement of Aguán, which places part of the blame for the deaths on the carbon market itself. "Whoever gives the finance to these companies also becomes complicit in all these deaths. If they cut these funds, the landholders will feel somewhat pressured to change their methods."[71]

Though touted as a classic "win-win" climate solution, there are very few winners in these farms and forests. In order for multinational corporations to protect their freedom to pollute the atmosphere, peasants, farmers, and Indigenous people are losing their freedom to live and sustain themselves in peace. When the Big Green groups refer to offsets as the "low-hanging fruit" of climate action, they are in fact making a crude cost-benefit analysis that concludes that it's easier to cordon off a forest inhabited by politically weak people in a poor country than to stop politically powerful corporate emitters in rich countries—that it's easier to pick the fruit, in other words, than dig up the roots.

The added irony is that many of the people being sacrificed for the carbon market are living some of the most sustainable, low-carbon lifestyles on the planet. They have strong reciprocal relationships with nature, drawing on local ecosystems on a small scale while caring for and regenerating the land so it continues to provide for them and their descendants. An environmental movement committed to real climate solutions would be looking for ways to support these ways of life—not severing deep traditions of stewardship and pushing more people to become rootless urban consumers.

Chris Lang, a British environmentalist based in Jakarta who runs an offset watchdog website called REDD-Monitor, told me that he never thought his job would involve exposing the failings of the green movement. "I hate the idea of the environmental movement fighting among itself instead of fighting the oil companies," he said. "It's just that these groups don't seem to have any desire to take on the oil companies, and with some of them, I'm not sure they really are environmentalists at all."[72]

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This is not to say that every project being awarded carbon credits is somehow fraudulent or actively destructive to local ways of life. Wind farms and solar arrays are being built, and some forests classified as offsets are being preserved. The problem is that by adopting this model of financing, even the very best green projects are being made ineffective as climate responses because for every ton of carbon dioxide the developers keep out of the atmosphere, a corporation in the industrialized world is able to pump a ton into the air, using offsets to claim the pollution has been neutralized. One step forward, one step back. At best, we are running in place. And as we will see, there are other, far more effective ways to fund green development than the international carbon market.

Geographer Bram Büscher coined the term "liquid nature" to refer to what these market mechanisms are doing to the natural world. As he describes it, the trees, meadows, and mountains lose their intrinsic, place-based meaning and become deracinated, virtual commodities in a global trading system. The carbon-sequestering potential of biotic life is virtually poured into polluting industries like gas into a car's tank, allowing them to keep on emitting. Once absorbed into this system, a pristine forest may look as lush and alive as ever, but it has actually become an extension of a dirty power plant on the other side of the planet, attached by invisible financial transactions. Polluting smoke may not be billowing from the tops of its trees but it may as well be, since the trees that have been designated as carbon offsets are now allowing that pollution to take place elsewhere.[73]

The mantra of the early ecologists was "everything is connected"—every tree a part of an intricate web of life. The mantra of the corporate-partnered conservationists, in sharp contrast, may as well be "everything is disconnected," since they have successfully constructed a new economy in which the tree is not a tree but rather a carbon sink used by people thousands of miles away to appease our consciences and maintain our levels of economic growth.

But the biggest problem with this approach is that carbon markets have failed even on their own terms, as markets. In Europe, the problems began with the decision to entice companies and countries to join the market by handing out a huge number of cheap carbon permits. When the economic crisis hit a few years later, it caused production and consumption to contract and emissions to drop on their own. That meant the new emissions market was drowning in excess permits, which in turn caused the price of carbon to drop dramatically (in 2013, a ton of carbon was trading for less than ¢4, compared to the target price of ¢20). That left little incentive to shift away from dirty energy or to buy carbon credits. Which helps explain why, in 2012, coal's share of the U.K.'s electricity production rose by more than 30 percent, while in Germany, as we have already seen, emissions from coal went up despite the country's rapid embrace of renewable power. Meanwhile, the United Nations Clean Development Mechanism has fared even worse: indeed it has "essentially collapsed," in the words of a report commissioned by the U.N. itself. "Weak emissions targets and the economic downturn in wealthy nations resulted in a 99 percent decline in carbon credit prices between 2008 and 2013," explains Oscar Reyes, an expert on climate finance at the Institute for Policy Studies.[74]

This is a particularly extreme example of the boom-and-bust cycle of markets, which are volatile and high-risk by nature. And that's the central flaw with this so-

called solution: it is simply too risky, and time is too short, for us to put our collective fate in such an inconstant and unreliable force. John Kerry has likened the threat of climate change to a "weapon of mass destruction," and it's a fair analogy.[75] But if climate change poses risks on par with nuclear war, then why are we not responding with the seriousness that that comparison implies? Why aren't we ordering companies to stop putting our future at risk, instead of bribing and cajoling them? Why are we gambling?

Tired of this time wasting, in February 2013, more than 130 environmental and economic justice groups called for the abolition of the largest carbon-trading system in the world, the EU's Emissions Trading System (ETS), in order "to make room for climate measures that work." The declaration stated that, seven years into this experiment, "The ETS has not reduced greenhouse gas emissions … the worst polluters have had little to no obligation to cut emissions at source. Indeed, offset projects have resulted in an *increase* of emissions worldwide: even conservative sources estimate that between ⅓ and ⅔ of carbon credits bought into the ETS 'do not represent real carbon reductions.' "[76]

The system has also allowed power companies and others to pass on the cost of compliance to their consumers, especially in the early years of the market, leading to a 2008 estimate by Point Carbon of windfall profits between $32 and $99 billion for electric utilities in the U.K., Germany, Spain, Italy, and Poland over a span of just five years. One report found airline companies raked in a windfall of up to $1.8 billion in their first year on the market in 2012. In short, rather than getting the polluters to pay for the mess they have created—a basic principle of environmental justice—taxpayers and ratepayers have heaped cash on them and for a scheme that hasn't even worked.[77]

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In the context of the European debacle, the fact that the U.S. Senate failed to pass climate legislation in 2009 should not be seen, as it often is, as the climate movement's greatest defeat, but rather as a narrowly dodged bullet. The cap-and-trade bills under consideration in the U.S. House and Senate in Obama's first term would have repeated all the errors of the European and U.N. emission trading systems, and then added some new ones of their own.

Both laws were based on proposals crafted by a coalition put together by the Environmental Defense Fund's Fred Krupp, which had brought large polluters (General Electric, Dow Chemical, Alcoa, ConocoPhillips, BP, Shell, the coal giant Duke Energy, DuPont, and many more) together with a handful of Big Green

groups (The Nature Conservancy, the National Wildlife Federation, the Natural Resources Defense Council, the World Resources Institute, and what was then called the Pew Center on Global Climate Change). Known as the United States Climate Action Partnership (USCAP), the coalition had been guided by the familiar defeatist logic that there is no point trying to take on the big emitters directly so it's better to try to get them onside with a plan laden with corporate handouts and loopholes.[78]

The deal that ultimately emerged out of USCAP—touted as a historic compromise between greens and industry—handed out enough free allowances to cover 90 percent of emissions from energy utilities, including coal plants, meaning they could keep on emitting that amount and pay no price at all. "We're not going to get a better deal," Duke Energy's then CEO Jim Rogers boasted. "Ninety percent is terrific." Congressman Rick Boucher, a Democrat representing coal-rich southwestern Virginia, gushed that the bill had so many giveaways that it "ushered in a new golden age of coal."[79]

These "free allowances" to burn or trade carbon were, in essence, bribes. As solar entrepreneur Jigar Shah put it: "When you look at these companies that were in USCAP, they were not interested in regulating carbon. They were interested in a huge amount of wealth being transferred to their companies in exchange for their vote on climate change."[80] Needless to say, a deal that made fossil fuel interests this happy would have brought us nowhere near the deep cuts to our greenhouse gas emissions that scientists tell us are required to have a good chance of keeping warming below 2 degrees Celsius. And yet the green groups in USCAP didn't merely stand back and let the corporations in a direct conflict of interest write U.S. climate policy—they actively recruited them to do so.

And the saddest irony in all this pandering is that it still wasn't enough for the polluters. Working with USCAP to help draft climate legislation was, for many of the big corporate players who joined the coalition, a hedge. In 2007, when the coalition was formed, climate legislation looked extremely likely, and these companies wanted to be sure that whatever bill passed Congress was riddled with enough loopholes to be essentially meaningless—a classic Beltway strategy. They also knew that getting behind cap-and-trade was the best way of blocking the worrying prospect of a newly elected president using the Environmental Protection Agency (EPA) to put firm limits on the amount of carbon companies could emit. In fact, Waxman-Markey, the primary piece of climate legislation based on the coalition's blueprint, specifically barred the EPA from regulating carbon from many major pollution sources, including coal-fired power plants. Michael Parr,

senior manager of government affairs at DuPont, summarized the corporate strategy succinctly: "You're either at the table or on the menu."[81]

The problem for Fred Krupp and his colleagues was that these companies were sitting at plenty of other tables at the same time. Many continued to be members of the American Petroleum Institute, the National Association of Manufacturers, and the U.S. Chamber of Commerce—all of which actively opposed climate legislation. When Barack Obama took office in January 2009, it looked like the corporate hard-liners were going to lose. But then, in the summer of 2009, with USCAP still trying to push cap-and-trade through the U.S. Senate, the political climate abruptly shifted. The economy was still deeply troubled, Obama's popularity was tanking, and a new political force came to centerstage. Flush with oil money from the Koch brothers and pumped up by Fox News, the Tea Party stormed town-hall meetings across the country, shouting about how Obama's healthcare reform was part of a sinister plan to turn the United States into an Islamic/Nazi/socialist utopia. In short order, the president started sending signals that he was reluctant to pick another major legislative fight.[82]

That's when many of the key corporate members of USCAP began to realize that they now had a solid chance of scuttling climate legislation altogether. Caterpillar and BP dropped out of the coalition, as did ConocoPhillips, after having complained of "unrecoverable costs … on what is historically a low-margin business." (ConocoPhillips revenues the year after it left USCAP totaled $66 billion, with a tidy net income of $12.4 billion.) And some of these companies didn't just leave Krupp's coalition of "former enemies": by directing their formidable firepower squarely at the legislation that they had helped craft, they made it abundantly clear that they had never stopped being its enemies. ConocoPhillips, for instance, set up a dedicated webpage to encourage visitors (including its roughly thirty thousand employees) to tell legislators how much they opposed the climate bill. "Climate change legislation will result in higher direct energy costs for the typical American family," the site warned, further claiming (outlandishly) that it "could result in a net loss of more than two million U.S. jobs each year." As for fellow defector BP, company spokesman Ronnie Chappell explained, "The lowest-cost option for reducing emissions is the increased use of natural gas."[83]

In other words, thinking they were playing a savvy inside game, Big Green was outmaneuvered on a grand scale. The environmentalists who participated in USCAP disastrously misread the political landscape. They chose a stunningly convoluted approach to tackling climate change, one that would have blocked far

more effective strategies, specifically because it was more appealing to big emitters—only to discover that the most appealing climate policy to polluters remained none at all. Worse, once their corporate partners fled the coalition, they had no shortage of ammo to fire at their former friends. The climate bill was a boondoggle, they claimed (it was), filled with handouts and subsidies (absolutely), and it would pass on higher energy costs to cash-strapped consumers (likely).[*] To top it all off, as pro-oil Republican congressman Joe Barton put it, "The environmental benefit is nonexistent" (as the left flank of the green movement had been saying all along).[84]

It was a classic double-cross, and it worked. In January 2010, the climate legislation modeled on USCAP's proposals died in the Senate, as it deserved to—but not before it discredited the very idea of climate action in the minds of many.[85]

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Plenty of postmortems have been written about what the greens did wrong in the cap-and-trade fight but the hardest hitting came in a scathing report by Harvard University sociologist Theda Skocpol. She concluded that a major barrier to success was the absence of a mass movement applying pressure from below. "To counter fierce political opposition, reformers will have to build organizational networks across the country, and they will need to orchestrate sustained political efforts that stretch far beyond friendly Congressional offices, comfy boardrooms, and posh retreats."[86] As we will see, a resurgent grassroots climate movement has now arrived that is doing precisely that—and it is winning a series of startling victories against the fossil fuel sector as a result.

But old habits die hard. When the cap-and-trade fight in the U.S. Congress was finally over, with around half a billion dollars spent pushing the policy (ultimately down the drain), the man who led the pro-business revolution in the green movement offered his version of what went wrong. Fred Krupp—in a sharp gray suit, his well-styled hair now white after two and a half decades leading the Environmental Defense Fund—explained that climate legislation had failed because greens had been too hard-line, too "shrill," and needed to be more "humble" and more bipartisan.[87] In other words, compromise some more, tone it down even further, assert ideas with less confidence, and try to be even more palatable to their opponents. Never mind that that is precisely what groups like EDF have been doing since Reagan.

Fittingly enough, Krupp chose to share these pearls of wisdom during the annual Brainstorm Green session hosted by *Fortune*, a magazine devoted to the celebration of wealth, and sponsored by, among others, Shell Oil.[88]

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* By 2011, the situation had become so surreal that Conservation International (CI) was the target of an embarrassing prank. A couple of activist/journalists posed as executives of the weapons giant Lockheed Martin and told the director of corporate relations for CI that they were looking for help greening their company's image. Rather than cutting their emissions, they said they were thinking of sponsoring an endangered species. Without missing a beat, the CI representative was recorded helpfully suggesting a bird of prey, to make the "link with aviation." ("We do not help companies with their image," CI later maintained, stressing that Lockheed would have needed to undergo a "due diligence process.")

* After my article on the subject appeared in *The Nation*, The Nature Conservancy adopted a policy to "divest from companies that derive a significant percentage of their revenue from fossil fuels with the highest carbon content and will support a shift to carbon-free energy in the longer term."

* It's worth keeping this history in mind when free market ideologues treat a cleaner environment as a natural stage in capitalist development. In fact it is the result of specific sets of regulations, ones that run directly counter to hard-right ideology.

* By the end of the 1980s, the majority of self-identified Republicans were telling pollsters that they thought there was "too little" spent protecting the environment. By 1990, the percentage of Republicans who agreed with that statement topped 70 percent.

* Indeed the worlds of finance and Big Green would become so entangled in the years to come—between donations, board members, and partnerships—that when The Nature Conservancy needed a new CEO in 2008, it recruited not from within the nonprofit world but from Goldman Sachs. Its current director, Mark Tercek, had been working at the notorious investment bank for some twenty-five years before moving over to the NGO, where he has consistently advanced a model of conservation based on bringing ever more parts of the natural world into the market.

* This is one of the many ironies of the Heartlanders' claim that greens are closet socialists. If so, then they are deep in the closet. In reality, many mainstream environmentalists bristle at the suggestion that they are part of the left at all, fearing (correctly) that such an identification would hurt their chances with foundation funders and corporate donors. Far from using climate change as a tool to alter the American way of life, many of the large environmental organizations spend their days doing everything in their power to furiously protect that way of life, at the direct expense of demanding the levels of change required by science.

* The Nature Conservancy, ever the envelope pusher, has been particularly enthusiastic in this regard, hiring its chief marketing officer straight from World Wrestling Entertainment and participating in the marketing frenzy that accompanied the release of Universal Pictures' film version of *The Lorax* (which used Dr. Seuss's anti-consumerism classic to hawk IHOP pancakes and Mazda SUVs). In 2012, the conservancy managed to outrage many of its female staffers by partnering with the online luxury goods retailer Gilt to promote the *Sports Illustrated*Swimsuit Edition (the magazine explained that "whether you decide to buy a bikini, surfboards or tickets to celebrate at our parties, any money you spend … will help The Nature Conservancy ensure we have beaches to shoot Swimsuit on for another half-century").

* Interestingly, before Nilsson got into the carbon game, he was investigated by a member of Queensland's parliament for selling what appeared to be entirely fictional Australian real estate to unlucky marks in none other than Nauru.

* Heartland regular Chris Horner called the bill "crony capitalism" on the Enron model—and Horner should know, because he used to work there.

PART THREE

STARTING ANYWAY

"The day capitalism is forced to tolerate non-capitalist societies in its midst and to acknowledge limits in its quest for domination, the day it is forced to recognize that its supply of raw material will not be endless, is the day when change will come. If there is any hope for the world at all, it does not live in climate-change conference rooms or in cities with tall buildings. It lives low down on the ground, with its arms around the people who go to battle every day to protect their forests, their mountains and their rivers because they know that the forests, the mountains and the rivers protect them.

"The first step towards reimagining a world gone terribly wrong would be to stop the annihilation of those who have a different imagination—an imagination that is outside of capitalism as well as communism. An imagination which has an altogether different understanding of what constitutes happiness and fulfillment. To gain this philosophical space, it is necessary to concede some physical space for the survival of those who may look like the keepers of our past, but who may really be the guides to our future."

–Arundhati Roy, 2010[1]

"When I started the lawsuit against Chevron in 1993, I thought, 'What we need to do to fight this company and to get justice is we need to unite the Amazon.' And that was a hard challenge. That was a hard task ahead. And now, today, I dare to say that we must unite the entire world. We have to unite the entire world to fight these companies, to fight these challenges."

–Luis Yanza, cofounder, Frente de Defensa de la Amazonía (Amazon Defense Front), 2010[2]

9

BLOCKADIA

The New Climate Warriors

"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

–The United Nations Rio Declaration on Environment and Development, 1992[1]

"An honest and scrupulous man in the oil business is so rare as to rank as a museum piece."

–U.S. Interior Secretary Harold Ickes, 1936[2]

"Passport," says the cop, tear gas canisters and grenades hanging off his bulletproof vest like medals of honor. We hand over the passports, along with press passes and other papers attesting that we are nothing more exciting than a vanload of Canadian documentary filmmakers.

The riot cop takes the documents wordlessly, motioning to our translator to get out of the car. He then whispers at length to a colleague whose eyes remain fixed on the enormous biceps bulging from his own crossed arms. Another cop joins the huddle, then another. The last one pulls out a phone and painstakingly reads the names and numbers on each document to whoever is on the other end, occasionally shooting a question to our translator. More uniformed men mill nearby. I count eleven in total. It's getting dark, the dirt road on which we have been apprehended is a mess and drops off sharply on one side. There are no streetlights.

I have the strong impression we are being deliberately screwed with—that the whole point of this lengthy document check is to force us to drive this rough road in the dark. But we all know the rules: look pleasant; don't make eye contact; don't

speak unless spoken to. Resist the impulse to take pictures of the line of heavily armed cops standing in front of coils of barbed wire (happily it turns out our camera guy was filming through his mesh hat). And Rule No. 1 on encounters with arbitrary power: do *not* show how incredibly pissed off you are.

We wait. Half an hour. Forty minutes. Longer. The sun sets. Our van fills with ravenous mosquitoes. We continue to smile pleasantly.

As far as checkpoints go, I've seen worse. In post-invasion Iraq, everyone had to submit to full pat-downs in order to get in and out of any vaguely official building. Once on the way in and out of Gaza, we were scanned eight different ways and interrogated at length by both the Israeli Defense Forces and Hamas. What's strange about what is happening on this dirt road is that we are not in a war zone, at least not officially. Nor is this a military regime, or an occupied territory, or any other place you might expect to be held and interrogated at length without cause. This is a public road in Greece, a democratic state belonging to the European Union. Moreover this particular road is in Halkidiki, a world-renowned tourist destination that attracts many thousands of visitors every year, drawn to the peninsula's stunning combination of sandy beaches, turquoise waters, olive groves, and old-growth forests filled with four-hundred-year-old beech and oak trees and dotted with waterfalls.

So what's up with all the riot police? The barbed wire? The surveillance cameras strapped to tree branches?

Welcome to Blockadia

What's up is that this area is no longer a Greek vacationland, though the tourists still crowd the white-washed resorts and oceanfront tavernas, with their blue-checked tablecloths and floors sticky with ouzo. This is an outpost of a territory some have taken to calling "Blockadia." Blockadia is not a specific location on a map but rather a roving transnational conflict zone that is cropping up with increasing frequency and intensity wherever extractive projects are attempting to dig and drill, whether for open-pit mines, or gas fracking, or tar sands oil pipelines.

What unites these increasingly interconnected pockets of resistance is the sheer ambition of the mining and fossil fuel companies: the fact that in their quest for high-priced commodities and higher-risk "unconventional" fuels, they are pushing relentlessly into countless new territories, regardless of the impact on the local ecology (in particular, local water systems), as well as the fact that many of the

industrial activities in question have neither been adequately tested nor regulated, yet have already shown themselves to be extraordinarily accident-prone.

What unites Blockadia too is the fact the people at the forefront—packing local council meetings, marching in capital cities, being hauled off in police vans, even putting their bodies between the earth-movers and earth—do not look much like your typical activist, nor do the people in one Blockadia site resemble those in another. Rather, they each look like the places where they live, and they look like everyone: the local shop owners, the university professors, the high school students, the grandmothers. (In the quaint seaside Greek village of Ierissos, with its red roofs and lively beach promenade, when an anti-mining rally is called, the owners of the tavernas have to wait tables themselves because their entire staffs are off at the demos.)

Resistance to high-risk extreme extraction is building a global, grassroots, and broad-based network the likes of which the environmental movement has rarely seen. And perhaps this phenomenon shouldn't even be referred to as an environmental movement at all, since it is primarily driven by a desire for a deeper form of democracy, one that provides communities with real control over those resources that are most critical to collective survival—the health of the water, air, and soil. In the process, these place-based stands are stopping real climate crimes in progress.

Seeing those successes, as well as the failures of top-down environmentalism, many young people concerned about climate change are taking a pass on the slick green groups and the big U.N. summits. Instead, they are flocking to the barricades of Blockadia. This is more than a change in strategy; it's a fundamental change in perspective. The collective response to the climate crisis is changing from something that primarily takes place in closed-door policy and lobbying meetings into something alive and unpredictable and very much in the streets (and mountains, and farmers' fields, and forests).

Unlike so many of their predecessors, who've spent years imagining the climate crisis through the astronaut's eye view, these activists have dropped the model globes and are getting lower-case earth under their nails once again. As Scott Parkin, a climate organizer with the Rainforest Action Network, puts it: "People are hungry for climate action that does more than asks you to send emails to your climate-denying congressperson or update your Facebook status with some clever message about fossil fuels. Now, a new antiestablishment movement has broken with Washington's embedded elites and has energized a new generation to stand in front of the bulldozers and coal trucks."[3] And it has taken the extractive

industries, so accustomed to calling the shots, entirely by surprise: suddenly, no major new project, no matter how seemingly routine, is a done deal.

In the Skouries forest near Ierissos where our van was stopped, the catalyst was a plan by the Canadian mining company Eldorado Gold to clear-cut a large swath of old-growth forest and reengineer the local water system in order to build a massive open-pit gold and copper mine, along with a processing plant, and a large underground mine.[4] We were pulled over in a part of the forest that will be leveled to make way for a large dam and tailings pond, to be filled with liquid waste from the mining operation. It was like visiting someone who had just been given six months to live.

Many of the people who reside in the villages nearby, who depend on this mountain for freshwater, are adamantly opposed to the mine. They fear for the health of their children and livestock, and are convinced that such a large-scale, toxic industrial operation has no place in a region highly dependent on tourism, fishing, and farming. Locals have expressed their opposition through every means they can think of. In a vacation community like this, that can make for odd juxtapositions: militant marches past miniature amusement parks and heated late night political meetings in thatched-roof bars that specialize in blender drinks. Or a local cheese maker, the pride of the village for his *Guinness Book of World Records* largest ever goat cheese, arrested and held in pretrial detention for weeks. Based on circumstantial evidence, the cheese maker and other villagers were suspects in an incident in which mining trucks and bulldozers were torched by masked intruders.[*5]

Despite its remote location, the fate of the Skouries forest is a matter of intense preoccupation for the entire country. It is debated in the national parliament and on evening talk shows. For Greece's huge progressive movement, it is something of a cause célèbre: urban activists in Thessaloniki and Athens organize mass demonstrations and travel to the woods for action days and fundraising concerts. "Save Skouries" graffiti can be seen all over the country and the official opposition party, the left-wing Syriza, has pledged that, if elected, it will cancel the mine as one of its first acts in power.

The governing, austerity-enforcing coalition, on the other hand, has also seized on Skouries as a symbol. Greek prime minister Antonis Samaras has announced that the Eldorado mine will go ahead "at all costs," such is the importance of protecting "foreign investment in the country." Invoking Greece's ongoing economic troubles, his coalition has claimed that building the mine, despite the local opposition, is critical to sending a signal to world markets that the country is

open for business. That will allow the nation to rapidly move ahead with a slate of other, highly controversial extractive projects currently in the pipeline: drilling for oil and gas in the Aegean and Ionian seas; new coal plants in the north; opening up previously protected beaches to large-scale development; and multiple other mining projects. As one prominent commentator put it, "This is the type of project that the country needs to overcome the economic crisis."[6]

Because of these national stakes, the state has unleashed a level of repression against the anti-mine movement that is unprecedented in Greece since the dark days of dictatorship. The forest has been transformed into a battle zone, with rubber bullets reportedly fired and tear gas so thick it caused older residents to collapse.[7] And of course the checkpoints, which are staggered along all the roads where heavy construction equipment has moved in.

But in this outpost of Blockadia, the police aren't the only ones with checkpoints: In Ierissos, local residents set up checkpoints at each entrance to their village after over two hundred fully armed riot police marched through the town's narrow streets firing tear gas canisters in all directions; one exploded in the schoolyard, causing children to choke in class.[8] To make sure they are never taken by surprise like this again, the checkpoints are staffed by volunteers around the clock, and when police vehicles are spotted someone runs to the church and rings the bell. In moments the streets are flooded with chanting villagers.

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Similar scenes, more reminiscent of civil war than political protest, are unfolding in countless other pieces of contested land around the world, all of which make up Blockadia's multiplying front lines. About eight hundred kilometers to the north of the Greek standoff, the farming village of Pungesti, Romania, was gearing up for a showdown against Chevron and its plans to launch the country's first shale gas exploration well.[9] In the fall of 2013, farmers built a protest camp in a field, carted in supplies that could hold them for weeks, dug a latrine, and vowed to prevent Chevron from drilling.

As in Greece, the response from the state was shockingly militarized, especially in such a pastoral environment. An army of riot police with shields and batons charged through the farm fields attacking peaceful demonstrators, several of whom were beaten bloody and taken away in ambulances. At one point angry villagers dismantled the fence protecting Chevron's operation, sparking more reprisals. In the village itself, riot police lined the streets like "a kind of occupying army," according to an eyewitness. Meanwhile, the roads into town were bisected with

police checkpoints and a travel ban was in force, which conveniently prevented media from entering the conflict zone and even reportedly blocked residents from grazing their cattle. For their part, villagers explained that they had no choice but to stop an extraction activity that they were convinced posed a grave threat to their livelihoods. "We live on agriculture here," one local reasoned. "We need clear water. What will our cattle drink if the water gets spoiled?"[10]

Blockadia also stretches into multiple resource hot spots in Canada, my home country. For instance, in October 2013—the same time that Pungesti was in the news—a remarkably similar standoff was playing out in the province of New Brunswick, on land claimed by the Elsipogtog First Nation, a Mi'kmaq community whose roots in what is now eastern Canada go back some ten thousand years. The people of Elsipogtog were leading a blockade against SWN Resources, the Canadian subsidiary of a Texas-based company, as it tried to conduct seismic testing ahead of a possible fracking operation. The land in question has not been handed over by war or treaty and Canada's highest court has upheld the Mi'kmaq's right to continue to access the natural resources of those lands and waters—rights the protesters say would be rendered meaningless if the territory becomes poisoned by fracking toxins.[11]

The previous June, members of the First Nation had announced the lighting of a "sacred fire," a ceremonial bonfire that would burn continuously for days, and invited non-Native Canadians to join them in blockading the gas company's trucks. Many did, and for months demonstrators camped near the seismic testing area, blocking roads and equipment as hand drums pounded out traditional songs. On several occasions, trucks were prevented from working, and at one point a Mi'kmaq woman strapped herself to a pile of seismic testing gear to prevent it from being moved.

The conflict had been mostly peaceful but then on October 17, acting on an injunction filed by the company, the Royal Canadian Mounted Police moved in to clear the road. Once again, a rural landscape was turned into a war zone: more than a hundred police officers—some armed with sniper rifles and accompanied by attack dogs—fired beanbag rounds into the crowd, along with streams of pepper spray and hoses. Elders and children were attacked and dozens were arrested, including the elected chief of the Elsipogtog First Nation. Some demonstrators responded by attacking police vehicles and by the end of the day, five cop cars and one unmarked van had burned. "Native shale-gas protest erupts in violence," read a typical headline.[12]

Blockadia has popped up, too, in multiple spots in the British countryside, where opponents of the U.K. government's "dash for gas" have used a range of creative tactics to disrupt industry activities, from protest picnics blockading the road to a fracking drill site in the tiny hamlet of Balcombe, West Sussex, to twenty-one activists shutting down a gas power station that towers over the abandoned historical village of West Burton and its beautiful river, the "silver" Trent, as Shakespeare describes it in *Henry IV*. After a daring climb, the group set up camp for more than a week atop two ninety-meter-high water cooling towers, making production impossible (the company was forced to drop a £5-million lawsuit in the face of public pressure). More recently, activists blocked the entrance to a fracking test site near the city of Manchester with a giant wind turbine blade laid on its side.[13]

Blockadia was also aboard the *Arctic Sunrise*, when thirty Greenpeace activists staged a protest in the Russian Arctic to draw attention to the dangers of the rush to drill under the melting ice. Armed Coast Guard officers rappelled onto the vessel from a helicopter, storming it commando-style, and the activists were thrown in jail for two months.[14] Originally facing charges of piracy, which carry sentences of ten to fifteen years, the international activists were all eventually freed and granted amnesty after the Russian government was shamed by a huge international campaign, which included not just demonstrations in at least forty-nine countries but pressure from numerous heads of state and eleven Nobel Peace Prize winners (not to mention Paul McCartney).

The spirit of Blockadia can be seen even in the most repressive parts of China, where herders in Inner Mongolia have rebelled against plans to turn their fossil fuel–rich region into the country's "energy base." "When it's windy, we get covered in coal dust because it's an open mine. And the water level keeps dropping every year," herder Wang Wenlin told the *Los Angeles Times*, adding, "There's really no point living here anymore." With courageous actions that have left several demonstrators dead outside the mines and blockades of coal trucks, locals have staged rolling protests around the region and have been met with ferocious state repression.[15]

It's partly due to this kind of internal opposition to coal mining that China imports increasing amounts of coal from abroad. But many of the places where its coal comes from are in the throes of Blockadia-style uprisings of their own. For instance, in New South Wales, Australia, opposition to new coal mining operations grows more serious and sustained by the month. Beginning in August 2012, a coalition of groups established what they call the "first blockade camp of a coal

mine in Australia's history," where for a year and a half (and counting) activists have chained themselves to various entrances of the Maules Creek project—the largest mine under construction in the country, which along with others in the area is set to decimate up to half of the 7,500-hectare (18,500 acre) Leard State Forest and to wield a greenhouse gas footprint representing more than 5 percent of Australia's annual emissions, according to one estimate.[16]

Much of that coal is destined for export to Asia, however, so activists are also gearing up to fight port expansions in Queensland that would hugely increase the number of coal ships sailing from Australia each year, including through the vulnerable ecosystem of the Great Barrier Reef, a World Heritage Site and the earth's largest natural structure made up of living creatures. The Australian Marine Conservation Society describes the dredging of the ocean floor to make way for increased coal traffic as an "unprecedented" threat to the fragile reef, which is already under severe stress from ocean acidification and various forms of pollution runoff.[17]

This is only the barest of sketches of the contours of Blockadia—but no picture would be complete without the astonishing rise of resistance against virtually any piece of infrastructure connected to the Alberta tar sands, whether inside Canada or in the United States.

And none more so than TransCanada's proposed Keystone XL pipeline. Part of the broader Keystone Pipeline System crisscrossing the continent, the first phase of the project, known as Keystone 1, got off to an inauspicious start. In its first year or so of operation, pump stations along the pipeline spilled tar sands oil fourteen times in the U.S. Most spills were small, but two of the biggest forced the entire pipeline to shut down twice in a single month. In one of these cases, a North Dakota rancher woke up to the sight of an oil geyser surging above the cottonwood trees near his farm, remarking that it was "just like in the movies when you strike oil and it's shooting up." If Keystone XL is constructed in full (the southern leg, from Oklahoma to export terminals on the Texas coast, is already up and running), the $7 billion project will add a total of 2,677 kilometers of new pipeline running through seven states and provinces, delivering up to 830,000 barrels per day of mostly tar sands oil to Gulf Coast refineries and export terminals.[18]

It was Keystone that provoked that historic wave of civil disobedience in Washington, D.C., in 2011 (see page 139), followed by what were then the largest protests in the history of the U.S. climate movement (more than 40,000 people outside the White House in February 2013). And it is Keystone that brought together the unexpected alliance of Indigenous tribes and ranchers along the

pipeline route that became known as "the Cowboy and Indian alliance" (not to mention unlikely coalitions that brought together vegan activists who think meat is murder with cattle farmers whose homes are decorated with deer heads). In fact the direct-action group Tar Sands Blockade first coined the term "Blockadia" in August 2012, while planning what turned into an eighty-six-day tree blockade challenging Keystone's construction in East Texas. This coalition has used every imaginable method to stop the pipeline's southern leg, from locking themselves inside a length of pipe that had not yet been laid, to creating a complex network of treehouses and other structures along the route.[19]

In Canada, it was the Northern Gateway pipeline, being pushed by the energy company Enbridge, that similarly awoke the sleeping giant of latent ecological outrage. The 1,177-kilometer pipe would begin near Edmonton, Alberta, and carry 525,000 barrels of mostly diluted tar sands oil per day across roughly one thousand waterways, passing through some of the most pristine temperate rainforest in the world (and highly avalanche-prone mountains), finally ending in a new export terminal in the northern British Columbia town of Kitimat. There the oil would be loaded onto supertankers and then navigated through narrow Pacific channels that are often battered by ferocious waves (resorts in this part of B.C. market winter as "storm-watching" season). The sheer audacity of the proposal—putting so much of Canada's most beloved wilderness, fishing grounds, beaches, and marine life at risk—helped give birth to an unprecedented coalition of Canadians who oppose the project, including a historic alliance of Indigenous groups in British Columbia who have vowed to act as "an unbroken wall of opposition from the U.S. border to the Arctic Ocean," to stop any new pipeline that would carry tar sands oil through their collective territory.[20]

The companies at the centers of these battles are still trying to figure out what hit them. TransCanada, for instance, was so sure it would be able to push through the Keystone XL pipeline without a hitch that it went ahead and bought over $1 billion worth of pipe. And why not? President Obama has an "all of the above" energy strategy, and Canadian prime minister Stephen Harper called the project a "no-brainer." But instead of the rubberstamp TransCanada was expecting, the project sparked a movement so large it revived (and reinvented) U.S. environmentalism.[21]

Spend enough time in Blockadia and you start to notice patterns. The slogans on the signs: "Water is life," "You can't eat money," "Draw the line." A shared determination to stay in the fight for the long haul, and to do whatever it takes to win. Another recurring element is the prominent role played by women, who often

dominate the front lines, providing not only powerful moral leadership but also some of these movements' most enduring iconography. In New Brunswick, for instance, the image of a lone Mi'kmaq mother, kneeling in the middle of the highway before a line of riot police, holding up a single eagle feather went viral. In Greece, the gesture that captured hearts and minds was when a seventy-four-year-old woman confronted a line of riot police by belting out a revolutionary song that had been sung by the Greek resistance against German occupation. From Romania, the image of an old woman wearing a babushka and holding a knobby walking stick went around the world under the caption: "You know your government has failed when your grandma starts to riot."[22]

The various toxic threats these communities are up against seem to be awakening impulses that are universal, even primal—whether it's the fierce drive to protect children from harm, or a deep connection to land that had been previously suppressed. And though reported in the mainstream press as isolated protests against specific projects, these sites of resistance increasingly see themselves as part of a global movement, one opposing the latest commodities rush wherever it is taking place. Social media in particular has allowed geographically isolated communities to tell their stories to the world, and for those stories, in turn, to become part of a transnational narrative about resistance to a common ecological crisis.

So busloads of anti-fracking and anti-mountaintop-removal activists traveled to Washington, D.C., to protest the Keystone XL pipeline, knowing they are up against a common enemy: the push into ever more extreme and high-risk forms of fossil fuel. Communities in France, upon discovering that their land has been leased to a gas company for something called "hydraulic fracturing"—a previously unknown practice in Europe—got in contact with French-speaking activists in Quebec, who had successfully won a moratorium against the practice (and they, in turn, relied heavily on U.S. activists, in particular the documentary film *Gasland*, which has proved to be a potent global organizing tool).[*23] And eventually the entire global movement came together for a "Global Frackdown" in September 2012, with actions in two hundred communities in more than twenty countries, with even more participating a year later.

Something else unites this network of local resistance: widespread awareness of the climate crisis, and the understanding that these new extraction projects—which produce far more carbon dioxide, in the case of the tar sands, and more methane, in the case of fracking, than their conventional counterparts—are taking the entire planet in precisely the wrong direction. These activists understand that keeping

carbon in the ground, and protecting ancient, carbon-sequestering forests from being clear-cut for mines, is a prerequisite for preventing catastrophic warming. So while these conflicts are invariably sparked by local livelihood and safety concerns, the global stakes are never far from the surface.

Ecuadorian biologist Esperanza Martínez, one of the leaders of the movement for an "oil-free Amazon," asks the question at the heart of all of these campaigns: "Why should we sacrifice new areas if fossil fuels should not be extracted in the first place?" Indeed, if the movement has a guiding theory, it is that it is high time to close, rather than expand, the fossil fuel frontier. Seattle-based environmental policy expert KC Golden has called this "the Keystone Principle." He explains, "Keystone isn't simply a pipeline in the sand for the swelling national climate movement." It's an expression of the core principle that before we can effectively solve this crisis, we have to "stop making it worse. Specifically and categorically, we must cease making large, long-term capital investments in new fossil fuel infrastructure that 'locks in' dangerous emission levels for many decades … step one for getting out of a hole: Stop digging."[24]

So if Obama's energy policy is "all of the above"—which effectively means full steam ahead with fossil fuel extraction, complemented with renewables around the margins—Blockadia is responding with a tough philosophy that might be described as "None of the below." It is based on the simple principle that it's time to stop digging up poisons from the deep and shift, with all speed, to powering our lives from the abundant energies on our planet's surface.

Operation Climate Change

While the scale and connectivity of this kind of anti-extraction activism is certainly new, the movement began long before the fight against Keystone XL. If it's possible to trace this wave back to a time and place, it should probably be the 1990s in what is surely the most oil-ravaged place on the planet: the Niger Delta.

Since the doors to foreign investors were flung open near the end of British colonial rule, oil companies have pumped hundreds of billions of dollars' worth of crude out of Nigeria, most from the Niger Delta, while consistently treating its land, water, and people with undisguised disdain. Wastewater was dumped directly into rivers, streams, and the sea; canals from the ocean were dug willy-nilly, turning precious freshwater sources salty, and pipelines were left exposed and unmaintained, contributing to thousands of spills. In an often cited statistic,

an *Exxon Valdez–worth* of oil has spilled in the Delta every year for about fifty years, poisoning fish, animals, and humans.[25]

But none of this compares with the misery that is gas flaring. Over the course of extracting oil, a large amount of natural gas is also produced. If the infrastructure for capturing, transporting, and using that gas were built in Nigeria, it could meet the electricity needs of the entire country. Yet in the Delta, the multinational companies mostly opt to save money by setting it on fire, or flaring it, which sends the gas into the atmosphere in great pillars of polluting fire. The practice is responsible for about 40 percent of Nigeria's total CO_2 emissions (which is why, as discussed, some companies are absurdly trying to collect carbon credits for stopping this practice). Meanwhile, more than half of Delta communities lack electricity and runningwater, unemployment is rampant, and, in a cruel irony, the region is plagued by fuel shortages.[26]

Since the 1970s, Nigerians living in the Delta have been demanding redress for the damage done to them by multinational oil giants. The fight entered a new phase at the start of the 1990s when the Ogoni—a relatively small Indigenous group in the Niger Delta—organized the Movement for the Survival of the Ogoni People (MOSOP), led by the famed human rights activist and playwright Ken Saro-Wiwa. The group took particular aim at Shell, which had extracted $5.2 billion from Ogoniland between 1958 and 1993.[27]

The new organization did more than beg the government for better conditions, it asserted the rights of the Ogoni people to control the resources under their lands and set about taking those rights back. Not only were oil installations shut down, but as Nigerian political ecologist and environmental activist Godwin Uyi Ojo writes that, on January 4, 1993, "an estimated 300,000 Ogoni, including women and children, staged a historic non-violent protest, and marched against Shell's 'ecological wars.' "That year, Shell was forced to pull out of Ogoni territory, forsaking significant revenues (though the company remains the biggest oil player in other parts of the Delta). Saro-Wiwa stated that the Nigerian state "will have to shoot and kill every Ogoni man, woman and child to take more of their oil."[28]

To this day, oil production has ceased in Ogoniland—a fact that remains one of the most significant achievements of grassroots environmental activism anywhere in the world. Because of Ogoni resistance, carbon has stayed in the ground and out of the atmosphere. In the two decades since Shell withdrew, the land has slowly begun to heal, and there are tentative reports of improved farming output. This represents, according to Ojo, "on a global scale, the most formidable community-wide resistance to corporate oil operations."[29]

But Shell's banishment was not the end of the story. From the start of the protests, the Nigerian government—which relies on oil for 80 percent of its revenues and 95 percent of its export earnings—saw the organized Ogoni as a grave threat. As the region mobilized to take its land back from Shell, thousands of Delta residents were tortured and killed and dozens of Ogoni villages were razed. In 1995, the military regime of General Sani Abacha tried Ken Saro-Wiwa and eight of his compatriots on trumped-up charges. And then all nine men were hanged, fulfilling Saro-Wiwa's prediction that "they are going to arrest us all and execute us. All for Shell."[30]

It was a wrenching blow to the movement, but residents of the Niger Delta fought on. By employing increasingly militant tactics like taking over offshore oil platforms, oil barges, and flow stations, this community-led resistance managed to shut down roughly twenty oil installations, significantly reducing production.[31]

A key and little examined chapter in the Niger Delta's fossil fuel resistance took place at the tail end of 1998. Five thousand young people belonging to the Ijaw Nation, one of the largest ethnic groups in Nigeria, held a gathering in Kaiama, a town in a southern province of the Delta. There, the Ijaw Youth Council drafted the Kaiama Declaration, which asserted that 70 pecent of the government's oil revenues came from Ijaw land and that, "Despite these huge contributions, our reward from the Nigerian State remains avoidable deaths resulting from ecological devastation and military repression." The declaration—endorsed by a huge cross-section of Delta society—stated: "All land and natural resources (including mineral resources) within the Ijaw territory belong to Ijaw communities and are the basis of our survival," and went on to demand "Self Government and resource control."[32]

But it was Clause 4 that commanded the most attention: "We, therefore, demand that all oil companies stop all exploration and exploitation activities in the Ijaw area.… Hence, we advise all oil companies staff and contractors to withdraw from Ijaw territories by the 30th December, 1998 pending the resolution of the issue of resource ownership and control in the Ijaw area of the Niger Delta."[33]

The Ijaw Youth Council voted unanimously to call their new offensive Operation Climate Change. "The idea was: we are going to change our world," Isaac Osuoka, one of the movement's organizers, told me. "There was an understanding of the link that the same crude oil that impoverishes us, also impoverishes the Earth. And that a movement to change the wider world can begin from changing our own world." This was, in other words, an attempt at another kind of climate change—an effort by a group of people whose lands had been

poisoned and whose future was imperiled to change their political climate, their security climate, their economic climate, and even their spiritual climate.[34]

As promised, on December 30 the youth took to the streets in the thousands. The leadership instructed participants not to carry weapons and not to drink. The demonstrations—called*Ogeles*, which are traditional Ijaw processions—were nonviolent and dramatic. Many participants wore black, held candles, sang, danced, and drummed. Several oil platforms were occupied, not with arms but through the sheer numbers of bodies that overwhelmed security guards. "Sometimes," Osuoka recalled in a phone interview, "a person will have worked for a short time for the oil companies, so they knew which valve was the one to turn off."

The Nigerian government's response was overwhelming. An estimated fifteen thousand troops were mobilized, warships were sent, as were fleets of tanks. In some regions the government declared a state of emergency and imposed a curfew. According to Osouka, "In village after village, soldiers deployed by the state opened fire on unarmed citizens." In the towns of "Kaiama, Mbiama, and Yenagoa people were killed in the streets and women and young girls were raped in their homes as the state unleashed mayhem, ostensibly to defend oil installations."[35]

The confrontations continued for about a week. By the end, as many as 200 or possibly more lives were reported lost, and dozens of houses had been burned to the ground. In at least one case, the soldiers who conducted lethal raids flew into the area on a helicopter taken from a Chevron operation. (The oil giant claimed it had no choice but to allow the equipment to be used by the military, since it came from a joint venture with the Nigerian government, though as Human Rights Watch noted, "The company did not issue any public protest at the killings; nor has it stated that it will take any steps to avoid similar incidents in the future.")[36]

Brutal events like these go a long way toward explaining why many young people in the Niger Delta today have lost their faith in nonviolence. And why, by 2006, the area was in the throes of a full-blown armed insurgency, complete with bombings of oil infrastructure and government targets, rampant pipeline vandalism, ransom kidnapping of oil workers (designated as "enemy combatants" by the militants), and, more recently, amnesty deals that offered cash for guns. Godwin Uyi Ojo writes that, as the armed conflict wore on, "grievance was soon mingled with greed and violent crimes."[37] In the process, the original goals of the movement—to stop the ecological plunder, and take back control over the region's resource—became harder to decipher.

And yet it is worth looking back to the 1990s when the aims were clear. Because what is evident in the original struggles of the Ogoni and Ijaw is that the fight against violent resource extraction and the fight *for* greater community control, democracy, and sovereignty are two sides of the same coin. The Nigerian experience also had a huge and largely uncredited influence on other resource-rich regions in the Global South that found themselves facing off against multinational oil giants.

The most important such exchange took place in 1995, immediately after the killing of Ken Saro-Wiwa, when activists from Environmental Rights Action in Nigeria formed an alliance with a similar organization in Ecuador, called Acción Ecológica. At that time Acción Ecológica was neck deep in an environmental and human health disaster that Texaco had left behind in a northeastern region of the country, an incident that became known as the "Rainforest Chernobyl." (Chevron, after acquiring Texaco, was later ordered to pay $9.5 billion in damages by the Ecuadorian supreme court; the legal battles are still ongoing).[38] These frontline activists in two of the worst oil-impacted regions on the planet formed an organization called Oilwatch International, which has been at the forefront of the global movement to "leave the oil in the soil" and whose influence can be felt throughout Blockadia.

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As the experiences in Nigeria and Ecuador make clear, anti-extraction activism is not a new phenomenon. Communities with strong ties to the land have always, and will always, defend themselves against businesses that threaten their ways of life. And fossil fuel resistance has a long history in the United States, most notably against mountaintop removal coal mining in Appalachia. Moreover, direct action against reckless resource extraction has been a part of the environmental movement for a very long time and has succeeded in protecting some of the planet's most biologically diverse lands and waters. Many of the specific tactics being used by Blockadia activists today—tree-sits and equipment lockdowns in particular—were developed by Earth First! in the 1980s, when the group fought "wars in the woods" against clear-cut logging.

What has changed in recent years is largely a matter of scale, which is itself a reflection of the dizzying ambitions of the extractive project at this point in history. The rise of Blockadia is, in many ways, simply the flip side of the carbon boom. Thanks to a combination of high commodity prices, new technologies, and depleted conventional reserves, the industry is going further on every front. It is

extracting more, pushing into more territory, and relying on more risky methods. Each of these factors is fueling the backlash, so it's worth looking at each in turn.

All in the Sacrifice Zone

Though there are certainly new and amplified risks associated with our era of extreme energy (tar sands, fracking for both oil and gas, deepwater drilling, mountaintop removal coal mining), it's important to remember that these have never been safe or low-risk industries. Running an economy on energy sources that release poisons as an unavoidable part of their extraction and refining has always required sacrifice zones—whole subsets of humanity categorized as less than fully human, which made their poisoning in the name of progress somehow acceptable.

And for a very long time, sacrifice zones all shared a few elements in common. They were poor places. Out-of-the-way places. Places where residents lacked political power, usually having to do with some combination of race, language, and class. And the people who lived in these condemned places knew they had been written off. To quote Paula Swearengin, an activist from a coal mining family near Beckley, West Virginia, a landscape ravaged by mountaintop-removal coal mining: "We live in the land of the lost."[39]

Through various feats of denialism and racism, it was possible for privileged people in North America and Europe to mentally cordon off these unlucky places as hinterlands, wastelands, nowheres—or unluckiest of all, as in the case of Nauru, middle of nowheres. For those fortunate enough to find ourselves outside those condemned borders, myself among them, it seemed as if our places—the ones where we live and to which we escape for pleasure (the assumed somewheres, the centers, or best of all, the centers of everywhere)—would not be sacrificed to keep the fossil fuel machine going.

And up until quite recently, that has held up as the grand bargain of the carbon age: the people reaping the bulk of the benefits of extractivism pretend not to see the costs of that comfort so long as the sacrifice zones are kept safely out of view.

But in less than a decade of the extreme energy frenzy and the commodity boom, the extractive industries have broken that unspoken bargain. In very short order, the sacrifice zones have gotten a great deal larger, swallowing ever more territory and putting many people who thought they were safe at risk. Not only that, but several of the largest zones targeted for sacrifice are located in some of the wealthiest and most powerful countries in the world. For instance, Daniel Yergin,

energy industry consultant (and author of *The Prize*), euphorically described the newfound capacity to extract oil from "tight rock" formations—usually shale—as being akin to discovering whole new petrostates: "This is like adding another Venezuela or Kuwait by 2020, except these tight oil fields are in the United States."[40]

And of course it's not just the communities next to these new oil fields that are asked to sacrifice. So much oil is now being extracted in the U.S. (or "Saudi America," as some market watchers call it) that the number of rail cars carrying oil has increased by *4111 percent* in just five years, from 9,500 cars in 2008 to an estimated 400,000 in 2013. (Little wonder that significantly more oil spilled in U.S. rail incidents in 2013 than spilled in the previous forty years combined—or that trains engulfed in smoking fireballs have become increasingly frequent sights on the nightly news.) In practice this means that hundreds if not thousands of towns and cities suddenly find themselves in the paths of poorly maintained, underregulated "oil bomb" trains—towns like Quebec's Lac-Mégantic, where, in July 2013, a train carrying seventy-two tank cars of fracked Bakken oil (more flammable than the regular kind) exploded, killing forty-seven people and flattening half of its picturesque downtown. (Former North Dakota governor George Sinner said the oil trains posed a "ridiculous threat" shortly after one blew up near his native town of Casselton.)[41]

The Alberta tar sands, meanwhile, are growing so fast that the industry will soon be producing more of its particular brand of high-carbon oil than current pipeline capacity can handle—which is why it is so determined to push projects like Keystone XL through the U.S. and Northern Gateway through British Columbia. "If there was something that kept me up at night," said Alberta's (then) energy minister Ron Liepert in June 2011, "it would be the fear that before too long we're going to be landlocked in bitumen. We're not going to be an energy superpower if we can't get the oil out of Alberta."[42] But building those pipelines, as we have seen, impacts a huge number of communities: the ones living along thousands of kilometers of proposed pipe, as well as those who live along vast stretches of coastline that would see their waters crowded with oil tankers, courting disaster.

No place, it seems, is off limits, and no extractive activity has set its sights on more new land than hydraulic fracturing for natural gas. To quote Chesapeake Energy's then-CEO Aubrey McClendon, in 2010, "In the last few years we have discovered the equivalent of two Saudi Arabias of oil in the form of natural gas in the United States. Not one, but two."[43] Which is why the industry is fighting to frack wherever it can. The Marcellus Shale, for instance, spans parts of

Pennsylvania, Ohio, New York, West Virginia, Virginia, and Maryland. And it is just one of many such massive blankets of methane-rich rock.

The endgame, according to Republican politician Rick Santorum, is to "drill everywhere"—and it shows. As *The Guardian*'s Suzanne Goldenberg reports, "Energy companies have fracked wells on church property, school grounds and in gated developments. Last November, an oil company put a well on the campus of the University of North Texas in nearby Denton, right next to the tennis courts and across the road from the main sports stadium and a stand of giant wind turbines." Fracking now covers so much territory that, according to a 2013 *Wall Street Journal* investigation, "more than 15 million Americans live within a mile of a well that has been drilled and fracked since 2000."[44]

In Canada, the ambitions are just as aggressive. "As of mid-2012, the entire underground subsoil of Montréal, Laval, and Longueuil (three of the main cities in Québec) had been claimed by gas and petrol companies," reports Kim Cornelissen, a former politician turned anti-fracking campaigner in the province. (So far, Quebec's residents have managed to fend off the gas companies with a moratorium.) In Britain, the area under consideration for fracking adds up to about half the entire island. And in July 2013, residents of the northeast of England were enraged to hear their region described as "uninhabited and desolate" in the House of Lords—and therefore eminently deserving of sacrifice. "Certainly in part of the northeast where there's plenty of room for fracking, well away from anybody's residence where we could conduct [it] without any kind of threat to the rural environment," said Lord Howell, who had been an energy advisor to David Cameron's government.[45]

This is coming as a rude surprise to a great many historically privileged people who suddenly find themselves feeling something of what so many frontline communities have felt for a very long time: how is it possible that a big distant company can come to *my* land and put me and my kids at risk—and never even ask my permission? How can it be legal to put chemicals in the air right where they know children are playing? How is it possible that the state, instead of protecting me from this attack, is sending police to beat up people whose only crime is trying to protect their families?

This unwelcome awakening has made the fossil fuel sector a whole lot of enemies out of onetime friends. People like South Dakota cattle rancher John Harter, who went to court to try to stop TransCanada from burying a portion of the Keystone XL pipeline on his land. "I've never considered myself a bunny hugger," he told a reporter, "but I guess if that's what I've got to be called now, I'm OK

with it." The industry has also alienated people like Christina Mills, who worked as an auditor for oil companies in Oklahoma for much of her career. But when a gas company started fracking in her middle-class North Texas subdivision, her views of the sector changed. "They made it personal here, and that's when I had a problem.… They came into the back of our neighbourhood, 300ft from the back fence. That is so intrusive."[46]

And fracking opponents could only laugh when, in February 2014, it emerged that none other than Exxon CEO Rex Tillerson had quietly joined a lawsuit opposing fracking-related activities near his $5 million Texas home, claiming it would lower property values. "I would like to officially welcome Rex to the 'Society of Citizens Really Enraged When Encircled by Drilling' (SCREWED)," wrote Jared Polis, a Democratic Congressman from Colorado, in a sardonic statement. "This select group of everyday citizens has been fighting for years to protect their property values, the health of their local communities, and the environment. We are thrilled to have the CEO of a major international oil and gas corporation join our quickly multiplying ranks."[47]

In 1776, Tom Paine wrote in his rabble-rousing pamphlet*Common Sense*, "It is the good fortune of many to live distant from the scene of sorrow."[48] Well, the distance is closing, and soon enough no one will be safe from the sorrow of ecocide. In a way, the name of the company at the center of Greece's anti-mining movement says it all: Eldorado—a reference to the legendary "lost city of gold" that drove the conquistadors to some of their bloodiest massacres in the Americas. This kind of pillage used to be reserved for non-European countries, with the loot returned to the motherland in Europe. But as Eldorado's activities in northern Greece make clear, today the conquistadors are pillaging on their home turf as well.

That may prove to have been a grave strategic error. As Montana-based environmental writer and activist Nick Engelfried puts it, "Every fracking well placed near a city's water supply and every coal train rolling through a small town gives some community a reason to hate fossil industries. And by failing to notice this, oil, gas and coal companies may be digging their political graves."[49]

None of this means that environmental impacts are suddenly evenly distributed. Historically marginalized people in the Global South, as well as communities of color in the Global North, are still at far greater risk of living downstream from a mine, next door to a refinery, or next to a pipeline, just as they are more vulnerable to the impacts of climate change. But in the era of extreme energy, there is no longer the illusion of discreet sacrifice zones anymore. As Deeohn Ferris, formerly

with the Lawyers' Committee for Civil Rights Under Law, aptly put it, "we're all in the same sinking boat, only people of color are closest to the hole."[50]

Another boundary breaker is, of course, climate change. Because while there are still plenty of people who are fortunate enough to live somewhere that is not (yet) directly threatened by the extreme energy frenzy, no one is exempt from the real-world impacts of increasingly extreme weather, or from the simmering psychological stress of knowing that we may very well grow old—and our young children may well grow up—in a climate significantly more treacherous than the one we currently enjoy. Like an oil spill that spreads from open water into wetlands, beaches, riverbeds, and down to the ocean floor, its toxins reverberating through the lifecycles of countless species, the sacrifice zones created by our collective fossil fuel dependence are creeping and spreading like great shadows over the earth. After two centuries of pretending that we could quarantine the collateral damage of this filthy habit, fobbing the risks off on others, the game is up, and we are all in the sacrifice zone now.

Choked in Enemy Territory

The fossil fuel industry's willingness to break the sacrifice bargain in order to reach previously off-limits pools of carbon has galvanized the new climate movement in several important ways. For one, the scope of many new extraction and transportation projects has created opportunities for people whose voices are traditionally shut out of the dominant conversation to form alliances with those who have significantly more social power. Tar sands pipelines have proven to be a particularly potent silo buster in this regard, and something of a gift to political organizing.

Beginning in northern Alberta, in a region where the worst impacts are being felt by Indigenous people, and often ending in places where the worst health impacts are felt by urban communities of color, these pipelines pass a whole lot of other places in between. After all, the same piece of infrastructure will travel through multiple states or provinces (or both); through the watersheds of big cities and tiny towns; through farmlands and fishing rivers; through more lands claimed by Indigenous people and through land occupied by the upper middle class. And despite their huge differences, everyone along the route is up against a common threat and therefore are potential allies. In the 1990s, it was trade deals that brought huge and unlikely coalitions together; today it is fossil fuel infrastructure.

Before the most recent push into extreme energy, Big Oil and Big Coal had grown accustomed to operating in regions where they are so economically omnipotent that they pretty much ran the show. In places like Louisiana, Alberta, and Kentucky—not to mention Nigeria and, until the Chávez era, Venezuela—the fossil fuel companies treat politicians as their unofficial PR wings and the judiciaries as their own personal legal departments. With so many jobs, and such a large percentage of the tax base on the line, regular people put up with an awful lot too. For instance, even after the Deepwater Horizon disaster, many Louisianans wanted higher safety standards and a bigger share of the royalties from offshore oil wealth—but most didn't join calls for a moratorium on deepwater drilling, despite all they had suffered.[51]

This is the Catch-22 of the fossil fuel economy: precisely because these activities are so dirty and disruptive, they tend to weaken or even destroy other economic drivers: fish stocks are hurt by pollution, the scarred landscape becomes less attractive to tourists, and farmland becomes unhealthy. But rather than spark a popular backlash, this slow poisoning can end up strengthening the power of the fossil fuel companies because they end up being virtually the only game in town.

As the extractive industries charge into territories previously considered out of bounds, however, they are suddenly finding themselves up against people who are far less compromised. In many of the new carbon frontiers, as well as in territories through which fossil fuel companies must move their product, the water is still relatively clean, the relationship to the land is still strong—and there are a great many people willing to fight very hard to protect ways of life that they view as inherently incompatible with toxic extraction.

For instance, one of the natural gas industry's biggest strategic mistakes was deciding it wanted to frack in and around Ithaca, New York—a liberal college town with a vibrant economic localization movement and blessed with breathtaking gorges and waterfalls. Faced with a direct threat to its idyllic community, Ithaca became not just a hub for anti-fracking activism but a center for serious academic research into the unexplored risks:it's likely no coincidence that researchers at Cornell University, based in Ithaca, produced the game-changing study on methane emissions linked to fracking, whose findings became an indispensable tool for the global resistance movement. And it was the industry's great misfortune that famed biologist and author Sandra Steingraber, a world-renowned expert on the link between industrial toxins and cancer, had recently taken up a post at Ithaca College. Steingraber threw herself into the fracking fight, providing expert testimony before countless audiences and helping to mobilize tens of thousands of

New Yorkers. This work contributed to not just keeping the frackers out of Ithaca but to a total of nearly 180 fracking bans or moratoria adopted by cities and towns across the state.[52]

The industry badly miscalculated again when it began construction on a 12,260-horsepower compressor station carrying Pennsylvania's fracked gas smack in the middle of the town of Minisink, New York. Many homes were within half a mile of the facility, including one just 180 meters away. And the town's residents weren't the only ones whose health was threatened by the station. The surrounding area is prized agricultural land dotted with small family farms, orchards, and vineyards growing organic and artisanal produce for New York's farmer's markets and locavore restaurants. So Millennium Pipeline—the company behind the compressor—found itself up against not just a bunch of angry, local farmers but also a whole lot of angry New York City hipsters, celebrity chefs, and movie stars like Mark Ruffalo, calling not just for an end to fracking but for the state to shift to 100 percent renewables.[53]

And then there was the almost unfathomably stupid idea of trying to open up some of Europe's first major fracking operations nowhere other than the South of France. When residents of the Department of Var—known for its olives, figs, sheep, and for the famed beaches of Saint-Tropez—discovered that several of their communities were in line for gas fracking, they organized furiously. Economist and activist Maxime Combes describes scenes around southern France at the inception of the movement, where "the halls of the town-meetings in impacted communities were packed to overflowing, and very often, there were more participants in these meetings than inhabitants in the villages." Var, Combes wrote, would soon experience "the largest citizen's mobilization seen in the history of a Departmentthat is usually on the right of the political spectrum." As a result of the industry's French folly, it ended up not just losing the right to frack near the Riviera (at least for now), but in 2011 France became the first country to adopt a nationwide fracking ban.[54]

Even something as routine as getting heavy machinery up to northern Alberta to keep the tar sands mines and upgraders running has ignited new resistance movements. In keeping with the mammoth scale of everything associated with the largest industrial project on earth, the machines being transported, which are manufactured in South Korea, can be about as long and heavy as a Boeing 747, and some of the "heavy hauls," as they are called, are three stories high. The shipments are so large, in fact, that these behemoths cannot be trucked normally. Instead, oil companies like ExxonMobil have to load them onto specialty trailers

that take up more than two lanes of highway, and are too high to make it under most standard overpasses.[55]

The only roads that meet the oil companies' needs are located in distinctly hostile territory. For instance, communities in Montana and Idaho have led a fierce multi-year campaign to prevent the rigs from traveling along the scenic but narrow Highway 12. They object to the human costs of having their critical roadway blocked for hours so that the huge machines can pass, as well as to the environmental risks of a load toppling on one of many hairpin turns and ending up in a stream or river (this is fly-fishing country and locals are passionate about their wild rivers).

In October 2010, a small crew of local activists took me on a drive along the part of Highway 12 that the so-called big rigs would have to travel. We went past groves of cedar and Douglas fir and glowing, golden-tipped larch, past signs for moose crossings and under towering rock outcroppings. As we drove, with fall leaves rushing downstream in Lolo Creek next to the road, my guides scouted locations for an "action camp" they were planning. It would bring together anti–tar sands activists from Alberta, ranchers, and Indigenous tribes all along the proposed route of the Keystone XL pipeline, and locals interested in stopping the big rigs on Highway 12. They discussed a friend who had offered to set up a mobile kitchen and the logistics of camping in early winter. Marty Cobenais, then the pipeline campaigner for the Indigenous Environmental Network, explained how all the campaigns are connected. "If they can stop the rigs here then it affects the [production] capacity in the tar sands to get the oil to put in the pipelines." Then he smiles. "That's why we are building a Cowboys and Indians alliance."[56]

Following a long fight, the rigs were ultimately barred from this section of Highway 12 after the Nez Perce tribe and the conservation group Idaho Rivers United filed a joint lawsuit. "They made a huge mistake trying to go through western Montana and Idaho," Alexis Bonogofsky, a Billings, Montana, based goat rancher and activist, told me. "It's been fun to watch."[57]

An alternate route for the huge trucks was eventually found, this one taking them through eastern Oregon. Another bad move. When the first load made its way through the state in December 2013, it was stopped several times by activist lockdowns and blockades. Members of the Confederated Tribes of the Umatilla Indian Reservation, objecting to the loads crossing their ancestral lands, led a prayer ceremony near the second shipment in Pendleton, Oregon. And though local concerns about the safety of the big rigs were real, many participants were clear that they were primarily motivated by fears over what these machines were helping

to do to our climate once they arrived at their destination. "This has gone too far," said one Umatilla blockader before she was arrested. "Our children are going to die from this."[58]

Indeed, the oil and coal industries are no doubt cursing the day that they ever encountered the Pacific Northwest—Oregon, Washington State, and British Columbia. There the sector has had to confront a powerful combination of resurgent Indigenous Nations, farmers, and fishers whose livelihoods depend on clean water and soil, and a great many relative newcomers who have chosen to live in that part of the world because of its natural beauty. It is also, significantly, a region where the local environmental movement never fully succumbed to the temptations of the corporate partnership model, and where there is a long and radical history of land-based direct action to stop clear-cut logging and dirty mining.

This has meant fierce opposition to tar sands pipelines, as we have seen. And the deep-seated ecological values of the Pacific Northwest have also become the bane of the U.S. coal industry in recent years. Between grassroots resistance to building new coal-fired plants, and pressure to shut down old ones, as well as the rapid rise of natural gas, the market for coal in the United States has collapsed. In a span of just four years, between 2008 and 2012, coal's share of U.S. electricity generation plummeted from about 50 percent to 37 percent. That means that if the industry is to have a future, it needs to ship U.S. coal to parts of the world that still want it in large quantities. That means Asia. (It's a strategy that global energy expert and author Michael T. Klare has compared to the one tobacco companies began to employ a few decades ago: "Just as health officials now condemn Big Tobacco's emphasis on cigarette sales to poor people in countries with inadequate health systems," he writes, "so someday Big Energy's new 'smoking' habit will be deemed a massive threat to human survival.") The problem for the coal companies is that U.S. ports along the Pacific Coast are not equipped for such large coal shipments, which means that the industry needs to build new terminals. It also needs to dramatically increase the number of trains carrying coal from the massive mines of the Powder River Basin, in Wyoming and Montana, to the Northwest.[59]

As with the tar sands pipelines and the heavy hauls, the greatest obstacle to the coal industry's plans to reach the sea has been the defiant refusal of residents of the Pacific Northwest to play along. Every community in Washington State and Oregon that was slated to become the new home of a coal export terminal rose up in protest, fueled by health concerns about coal dust, but also, once again, by larger concerns about the global impact of burning all that coal.

This was expressed forcefully by KC Golden, who has helped to usher in many of the most visionary climate policies in Washington State, when he wrote: "The great Pacific Northwest is not a global coal depot, a pusher for fossil fuel addiction, a logistics hub for climate devastation. We're the last place on Earth that should settle for a tired old retread of the false choice between jobs and the environment. Coal export is fundamentally inconsistent with our vision and values. It's not just a slap in the face to 'green' groups. It's a moral disaster and an affront to our identity as a community."[60] After all, what is the point of installing solar panels and rainwater barrels if they are going to be coated in coal dust?

What these campaigns are discovering is that while it's next to impossible to win a direct fight against the fossil fuel companies on their home turf, the chances of victory greatly increase when the battleground extends into a territory where the industry is significantly weaker—places where nonextractive ways of life still flourish and where residents (and politicians) are less addicted to petro and coal dollars. And as the corroded tentacles of extreme energy reach out in all directions like a giant metal spider, the industry is pushing into a whole lot of those kinds of places.

Something else is going on too. As resistance to the extractive industries gains ground along these far-flung limbs, it is starting to spread back to the body of carbon country—lending new courage to resist even in those places that the fossil fuel industry thought it had already conquered.

The city of Richmond, California, across the bay from San Francisco, provides a glimpse of how quickly the political landscape can change. Predominantly African American and Latino, the city is a rough-edged, working-class pocket amidst the relentless tech-fuelled gentrification of the Bay Area. In Richmond, the big employer isn't Google, it's Chevron, whose huge refinery local residents blame for myriad health and safety problems, from elevated asthma rates to frequent accidents at the hulking facility (including a massive fire in 1999 that sent hundreds to hospital). And yet as the city's largest business and employer Chevron still had the power to call the shots.[61]

No more. In 2009 community members successfully blocked a plan by Chevron to significantly expand its oil refinery, which could have allowed the plant to process heavier, dirtier crudes such as bitumen from the tar sands. A coalition of environmental justice groups challenged the expansion in the streets and in the courts, arguing that it would further pollute Richmond's air. In the end, a superior court ruled against Chevron, citing a wholly inadequate environmental impact report (which "fails as an informational document," the judge tartly remarked).

Chevron appealed, but in 2010 it lost again. "This is a victory for the grassroots, and the people who have been suffering the health impacts of the refinery for the past 100 years," said Asian Pacific Environmental Network senior organizer Torm Nompraseurt.[62]

Richmond is not the only place dominated by Big Oil finding new reserves of courage to fight back. As the anti–tar sands movement spreads through North America and Europe, Indigenous communities in the belly of the beast—the ones who were raising the alarm about the dangers of the tar sands long before large environmental groups showed any interest in the issue—have also been emboldened to go further than ever. They've launched new lawsuits for violations of their land rights, with potentially grave ramifications for industry's access to carbon reserves, and delegations from deeply impacted First Nations communities are now constantly traveling the globe to alert more people to the devastation of their territories in the hopes that more arteries will be severed. One of these activists is Melina Laboucan-Massimo, a mesmerizing speaker with an understated courage who has spent much of her early thirties on the road, showing ugly slides of oil spills and ravaged landscapes and describing the silent war the oil and gas industry is waging on her people, the Lubicon Lake First Nation. "People are listening now," she told me, with tears in her eyes in the summer of 2013. "But it took a long time for people to get to that place." And this, she said, means that "there is hope. But it can be pretty dire sometimes in Alberta."[63]

What is clear is that fighting a giant extractive industry on your own can seem impossible, especially in a remote, sparsely populated location. But being part of a continent-wide, even global, movement that has the industry surrounded is a very different story.

This networking and cross-pollinating is usually invisible—it's a mood, an energy that spreads from place to place. But for a brief time in September 2013, Blockadia's web of inspiration was made visible. Five carvers from the Lummi Nation in Washington State—the coastal tribe that is leading the fight against the largest proposed coal export terminal on a contested piece of the West Coast—showed up in Otter Creek, Montana. They had traveled roughly 1,300 kilometers from their home territory of mountainous temperate rainforest and craggy Pacific beaches to southeastern Montana's parched grasses and gentle hills, carrying with them a twenty-two-foot cedar totem pole, strapped to a flatbed truck. Otter Creek is the site of a planned massive coal mine and the Lummi visitors stood on that spot, which until recently had been written off as doomed, with more than a hundred people from the nearby Northern Cheyenne Reservation, as well as a

group of local cattle ranchers. Together, they explored the ways in which they had been brought together by the ambitions of the carbon frenzy.

If the Otter Creek mine were built in the Powder River Basin, it would compromise the water and air for the ranchers and the Northern Cheyenne, and the railway transporting the coal to the west coast could disturb the Cheyenne's ancient burial grounds. The export port, meanwhile, was set to be built on one of the Lummi's ancient burial grounds, and the coal would then be carried on barges that would disrupt their fishing areas and potentially threaten many livelihoods.

The group stood in the valley by the banks of Otter Creek, under a sunny sky with hawks flying overhead, and blessed the totem pole with pipe smoke, vowing to fight together to keep the coal under their feet in the ground, and to keep both the railway and port from being built. The Lummi carvers then strapped the totem pole—which they had named Kwel hoy' or "We Draw the Line"—back onto the truck and took it on a sixteen-day journey to eight other communities, all of whom found themselves in the path of coal trains, big rigs, or tar sands pipelines and oil tankers. There were ceremonies at every stop, as the visitors and their hosts—both Native and non-Native—together drew connections among their various local battles against the extractive industries. The journey ended on Tsleil-Waututh land in North Vancouver, a pivotal community in the fight against increased oil tanker traffic. There the totem pole was permanently planted, looking out at the Pacific.

While in Montana, Lummi master carver Jewell Praying Wolf James explained the purpose of the long journey: "We're concerned about protecting the environment as well as people's health all the way from the Powder River to the West Coast.… We're traveling across the country to help unify people's voices. It doesn't matter who you are, where you are at or what race you are—red, black, white or yellow—we're all in this together."[64]

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This kind of alliance building among the various outposts of Blockadia has proven the movement's critics wrong time and time again. When the campaign against the Keystone XL pipeline began to gather momentum, several high-profile pundits insisted that it was all a waste of valuable time and energy. The oil would get out through another route regardless, and in the grand scheme of things the carbon it would carry represented little more than "a rounding error," as Jonathan Chait wrote in *New York* magazine. Better, they argued, to fight for a carbon tax, or for stronger EPA regulations, or for a reincarnation of cap-and-trade. *New York Times* columnist Joe Nocera went so far as to call the strategy "utterly

boneheaded," and accused James Hansen, whose congressional testimony launched the modern climate movement, of "hurting the very cause he claims to care so much about."[65]

What we now know is that Keystone was always about much more than a pipeline. It was a new fighting spirit, and one that is contagious. One battle doesn't rob from another but rather causes battles to multiply, with each act of courage, and each victory, inspiring others to strengthen their resolve.

The BP Factor: No Trust

Beyond the fossil fuel industry's pace of expansion, and its forays into hostile territory, something else has propelled this movement forward in recent years. That is the widespread conviction that today's extractive activities are significantly higher risk than their predecessors: tar sands oil is unquestionably more disruptive and damaging to local ecosystems than conventional crude. Many believe it to be more dangerous to transport, and once spilled harder to clean up. A similar risk escalation is present in the shift to fracked oil and gas; in the shift from shallow to deepwater drilling (as the BP disaster showed); and most dramatically, in the move from warm water to Arctic drilling. Communities in the path of unconventional energy projects are convinced they are being asked to risk a hell of a lot, and much of the time they are being offered very little in return for their sacrifice, whether lasting jobs or significant royalties.

Industry and government, for their part, have been extremely reluctant to acknowledge, let alone act upon, the stepped-up risks of extreme energy. For years, rail companies and officials have largely treated fracked oil from the Bakken as if it were the same as conventional crude—never mind the mounting evidence that it is significantly more volatile. (After announcing some mostly voluntary new safety measures beginning in early 2014 that were generally deemed inadequate, U.S. regulators claim to be in the process of developing a variety of tougher rules for oil-by-rail transport.)[66]

Similarly, government and industry are pushing the vast expansion of pipelines carrying oil from the Alberta tar sands despite a paucity of reliable, peer-reviewed research assessing whether dilbit, as diluted bitumen is called, is more prone to spill than conventional oil. But there is good reason for concern. As a joint 2011 report published by the Natural Resources Defense Council, the Sierra Club, and others notes, "There are many indications that dilbit is significantly more corrosive

to pipeline systems than conventional crude. For example, the Alberta pipeline system has had approximately sixteen times as many spills due to internal corrosion as the U.S. system. Yet, the safety and spill response standards used by the United States to regulate pipeline transport of bitumen are designed for conventional oil."[67]

Meanwhile, there are huge gaps in our knowledge about how spilled tar sands oil behaves in water. Over the last decade, there have been few studies published on the subject, and almost all were commissioned by the oil industry. However, a recent investigation by Environment Canada contained several disturbing findings, including that diluted tar sands oil sinks in saltwater "when battered by waves and mixed with sediments" (rather than floating on the ocean surface where it can be partially recovered) and that dispersants like those used during BP's Deepwater Horizon disaster have only "a limited effect," according to a report in *The Globe and Mail*. And there has been virtually no formal research at all on the particular risks of transporting tar sands oil via truck or rail.[68]

Similarly, large knowledge gaps exist in our understanding of the ecological and human health impact of the Alberta tar sands themselves, with their enormous open-pit mines, dump trucks that can reach up to five stories high, and roaring upgraders. In huge swaths of country surrounding Fort McMurray, ground zero of Canada's bitumen boom, the boreal forest—once a verdant, spongy bog—has been sucked dry of life. Every few minutes, the rancid air is punctured by the sound of booming cannons, meant to keep migrating birds from landing on the strange liquid silver surface of the huge tailing ponds.[*69] In Alberta the centuries-old war to control nature is not a metaphor; it is a very real war, complete with artillery.

The oil companies, of course, say that they are using the safest methods of environmental protection; that the vast tailings ponds are secure; that water is still safe to drink (though workers stick to bottled); that the land will soon be "reclaimed" and returned to moose and black bears (if any are still around). And despite years of complaints from First Nations communities like the Athabasca Chipewyan, situated downstream from the mines along the Athabasca River, industry and government continued to insist that whatever organic contaminants are found in the river are "naturally occurring"—this is an oil-rich region after all.

To anyone who has witnessed the scale of the tar sands operation, the assurances seem implausible. The government has yet to establish a genuinely independent, comprehensive system for monitoring mining impacts on the surrounding watersheds—in an industrial project whose total worth is approaching $500 billion. After it announced a flashy new federal-provincial monitoring program in

2012, the PR effort quickly spiraled out of its control. Referring to new findings from government and independent researchers, Bill Donahue, an environmental scientist with an advisory role in the program, said in February 2014 that "not only are those tailings ponds leaking, but it looks like it is flowing pretty much from those tailings ponds, through the ground and into the Athabasca River." He added: "So, there goes … that message we've been hearing about. 'These tailings ponds are safe, they don't leak,' and so on." In a separate incident, a team of government scientists with Environment Canada corroborated outside research on widespread contamination of snow around tar sands operations, though the Harper administration did its best to keep the researchers from speaking to the press.[70]

And there are still *no* comprehensive studies on the impacts of this pollution on human health. On the contrary, some who have chosen to speak out have faced severe reprisals. Most notable had been the experience of John O'Connor, a gentle, gray-bearded family doctor who still speaks with an accent from his native Ireland. In 2003, O'Connor began to report that, while treating patients in Fort Chipewyan, he was coming across alarming numbers of cancers, including extremely rare and aggressive bile-duct malignancies. He quickly found himself under fire from federal health regulators, who filed several misconduct charges against him with the College of Physicians and Surgeons of Alberta (including raising "undue alarm"). "I don't know, personally, of any situation where a doctor has had to go through what I've gone through," O'Connor has said of the reputational smears and the years spent fighting the allegations. He was, eventually, cleared of all charges and a subsequent investigation of cancer rates vindicated several of his warnings.[71]

But before that happened the message to other doctors was sent: a report commissioned by the Alberta Energy Regulator recently found a "marked reluctance to speak out" in the medical community about the health impact of the tar sands, with several interviewees pointing to Dr. O'Connor's experience. ("Physicians are quite frankly afraid to diagnose health conditions linked to the oil and gas industry," concluded the toxicologist who authored the report.) It has become routine, moreover, for the federal government to prevent senior environmental and climate scientists from speaking to journalists about any environmentally sensitive subjects. ("I'm available when media relations says I'm available," as one scientist told Postmedia.)[72]

And this is just one facet of what has become known as Prime Minister Stephen Harper's "war on science," with environmental monitoring budgets relentlessly slashed, covering everything from oil spills and industrial air pollution to the

broader impacts of climate change. Since 2008, more than two thousand scientists have lost their jobs as a result of the cuts.[73]

This is, of course, a strategy. Only by systematically failing to conduct basic research, and silencing experts who are properly tasked to investigate health and environmental concerns, can industry and government continue to make absurdly upbeat claims about how all is under control in the oil patch.[*74]

A similar willful blindness pervades the rapid spread of hydraulic fracking. For years the U.S. gas industry responded to reports of contaminated water wells by insisting that there was no scientific proof of any connection between fracking and the fact that residents living near gas drilling suddenly found they could set their tap water on fire. But the reason there was no evidence was because the industry had won an unprecedented exemption from federal monitoring and regulation—the so-called Halliburton Loophole, ushered in under the administration of George W. Bush. The loophole exempted most fracking from regulations of the Safe Drinking Water Act, helping to ensure that companies did not have to report any of the chemicals they were injecting underground to the Environmental Protection Agency, while shielding their use of the riskiest chemicals from EPA oversight.[75] And if no one knows what you are putting into the ground, it's tough to make a definitive link when those toxins start coming out of people's taps.

And yet as more evidence emerges, it is coming down hard on one side. A growing body of independent, peer-reviewed studies is building the case that fracking puts drinking water, including aquifers, at risk. In July 2013, for instance, a Duke University–led paper analyzed dozens of drinking water wells in northeastern Pennsylvania's Marcellus Shale region. The researchers found that the level of contamination from methane, ethane, and propane closely correlated with proximity to wells for shale gas. The industry response is that this is just natural leakage in regions rich in gas (the same line that tar sands operators in Alberta used when organic pollutants are found in the water there). But this study found that while methane was present in most of the sampled water wells, the concentration was *six times higher* in those within a kilometer of a gas well. In a study not yet published, the Duke team also analyzed water wells in Texas that had been previously declared safe. There, they found that contrary to assurances from government and industry, methane levels in many wells exceeded the minimum safety level set by the U.S. Geological Survey.[76]

The links between fracking and small earthquakes are also solidifying. In 2012, a University of Texas research scientist analyzed seismic activity from November 2009 to September 2011 over part of the huge Barnett Shale region in Texas, which

lies under Fort Worth and parts of Dallas, and found the epicenters of sixty-seven small earthquakes.[77] The most reliably located earthquakes were within two miles of an injection well. A July 2013 study in the *Journal of Geophysical Research* linked fracking-related waste injection to 109 small earthquakes that took place in a single year around Youngstown, Ohio, where an earthquake had not been previously recorded since monitoring began in the eighteenth century. The lead researcher of a similar study, published in *Science*, explained, "The fluids [in wastewater injection wells] are driving the faults to their tipping point."[78]

All of this illustrates what is so unsettling about unconventional extraction methods. Conventional oil and gas drilling, as well as underground coal mining, are destructive, to be sure. But comparatively speaking, they are the fossil fuel equivalent of the surgeon's scalpel—the carbon is extracted with relatively small incisions. But extreme, or unconventional extraction takes a sledgehammer to the whole vicinity. When the sledgehammer strikes the surface of the land—as in the case of mountaintop coal removal and open-pit tar sands—the violence can be seen with the naked eye. But with fracking, deepwater drilling, and underground ("in situ") tar sands extraction, the sledgehammer aims deep underground. At first this can seem more benign, since the impacts are less visible. Yet over and over again, we are catching glimpses of how badly we are breaking critical parts of our ecosystems that our best experts have no idea how to fix.

Educated by Disaster

In Blockadia outposts around the world, the initials "BP" act as a kind of mantra or invocation—shorthand for: whatever you do, take no extractive company at its word. The initials mean that passivity and trust in the face of assurances about world-class technology and cutting-edge safety measures are recipes for flammable water in your faucet, an oil slick in your backyard, or a train explosion down the street.

Indeed, many Blockadia activists cite the 2010 BP disaster in the Gulf of Mexico as either their political awakening, or the moment they realized they absolutely had to win their various battles against extreme energy. The facts of that case are familiar but bear repeating. In what became the largest accidental marine oil spill in history, a state-of-the-art offshore oil rig exploded, killing eleven workers, while oil gushed from the ruptured Macondo wellhead about one and a half kilometers below the surface. What made the strongest impression on the horrified public was

not the tar-coated tourist beaches in Florida or the oil-soaked pelicans in Louisiana. It was the harrowing combination of the oil giant's complete lack of preparedness for a blowout at those depths, as it scrambled for failed fix after failed fix, and the cluelessness of the government regulators and responders. Not only had regulators taken BP at its word about the supposed safety of the operation, but government agencies were so ill-equipped to deal with the scale of the disaster that they allowed BP—the perpetrator—to be in charge of the cleanup. As the world watched, the experts were clearly making it up as they went along.

The investigations and lawsuits that followed revealed that a desire to save money had played an important role in creating the conditions for the accident. For instance, as Washington raced to reestablish lost credibility, an investigation by a U.S. Interior Department agency found "BP's cost or time saving decisions without considering contingencies and mitigation were contributing causes of the Macondo blowout." A report from the specially created Presidential Oil Spill Commission similarly found, "Whether purposeful or not, many of the decisions that BP, [and its contractors] Halliburton and Transocean, made that increased the risk of the Macondo blowout clearly saved those companies significant time (and money)." Jackie Savitz, a marine scientist and a vice president at the conservation group Oceana, was more direct: BP "put profits before precautions. They let dollar signs drive a culture of risk-taking that led to this unacceptable outcome."[79] And any notion that this was a problem unique to BP was quickly dispelled when—only ten days after crews stopped the gush of oil into the Gulf of Mexico—an Enbridge pipeline burst in Michigan, causing the largest onshore oil spill in U.S. history. The pipe ruptured in a tributary of the Kalamazoo River and quickly contaminated more than fifty-five kilometers of waterways and wetlands with over one million gallons of oil, which left swans, muskrats, and turtles coated in black gunk. Homes were evacuated, local residents sickened, and onlookers watched "an alarming brown mist rise as river water the shade of a dark chocolate malt tumbled" over a local dam, according to one report.[80]

Like BP, it seemed that Enbridge had put profits before basic safety, while regulators slept at the switch. For instance, it turned out that Enbridge had known as early as 2005 that the section of pipeline that failed was corroding, and by 2009 the company had identified 329 other defects in the line stretching through southern Michigan that were serious enough to require immediate repair under federal rules. The $40 billion company was granted an extension, and applied for a second one just ten days before the rupture—the same day an Enbridge VP told Congress that the company could mount an "almost instantaneous" response to a

leak. In fact it took them seventeen hours to close the valve on the leaking pipeline. Three years after the initial disaster, about 180,000 gallons of oil were still sitting on the bottom of the Kalamazoo.[81]

As in the Gulf, where BP had been drilling at depths unheard of just a few years earlier, the Kalamazoo disaster was also linked to the new era of extreme, higher-risk fossil fuel extraction. It took a while, however, before that became clear. For more than a week Enbridge did not share with the public the very pertinent fact that the substance that had leaked was not conventional crude; it was diluted bitumen, piped from the Alberta tar sands through Michigan. In fact in the early days, Enbridge's then CEO, Patrick Daniel, flatly denied that the oil came from the tar sands and was later forced to backtrack. "What I indicated is that it was not what we have traditionally referred to as tar sands oil," Daniel claimed of bitumen thatcertainly had come from the tar sands. "If it is part of the same geological formation, then I bow to that expert opinion."[82]

In the fall of 2010, with many of these disasters still under way, Marty Cobenais of the Indigenous Environmental Network told me that the summer of spills was having a huge impact on communities in the path of new infrastructure projects, whether big rigs, pipelines, or tankers. "The oil industry always says there is 0 percent chance of their oil hitting the shores, but with BP, we saw that it did. Their projections are always wrong," he said, adding, "They are always talking about 'fail-proof' but with Kalamazoo we saw they couldn't turn it off for hours."[83]

In other words, a great many people are no longer believing what the industry experts tell them; they are believing what they see. And over the last few years we have all seen a whole lot. Unforgettable images from the bizarre underwater "spill-cam" showing BP's oil gushing for three long months into the Gulf merge seamlessly with shocking footage of methane-laced tap water being set on fire in fracking country, which in turn meld with the grief of Quebec's Lac-Mégantic after the horrific train explosion, with family members searching through the rubble for signs of their loved ones, which in turn fade to memories of 300,000 people in West Virginia being told they could not drink or bathe in their tap water for up to ten days after it had been contaminated by chemicals used in coal mining. And then there was the spectacle in 2012 of Shell's first foray into the highest-risk gambit of all: Arctic drilling. Highlights included one of Shell's giant drill rigs breaking free from its tow and running aground on the coast of Sitkalidak Island; another rig slipping its anchorage; and an oil spill containment dome being "crushed like a beer can," according to a U.S. Bureau of Safety and Environmental Enforcement official.[84]

If it seems like there are more such spills and accidents than before, that's because there are. According to a months-long investigation by EnergyWire, in 2012 there were more than six thousand spills and "other mishaps" at onshore oil and gas sites in the U.S. "That's an average of more than 16 spills a day. And it's a significant increase since 2010. In the 12 states where comparable data were available, spills were up about 17 percent." There is also evidence that companies are doing a poorer job of cleaning up their messes: in an investigation of pipeline leaks of hazardous liquids (mostly petroleum-related),*The New York Times* found that in 2005 and 2006 pipeline operators reported "recovering more than 60 percent of liquids spilled"; between 2007 and 2010 "operators recovered less than a third."[85]

It's not just the engineering failures that are feeding widespread mistrust. As with BP and Enbridge, it's the constant stream of revelations about the role that greed—fully liberated by lax regulation and monitoring—seems to have played in stacking the deck. For example, Shell's Arctic rig ran aground when it braved fierce weather in an apparent attempt by the company to get out of Alaska in time to avoid paying additional taxes in the state.[86]

And Montreal, Maine & Atlantic (MM&A), the rail company behind the Lac-Mégantic disaster, had received, one year before the accident, government permission to cut the number of staff on its trains to a single engineer. Until the 1980s, trains like the one that derailed were generally staffed by five employees, all sharing the duties of operating safely. Now it's down to two—but for MM&A, that was still too much. According to one of the company's former railway workers, "It was all about cutting, cutting, cutting." Compounding these risks, according to a four-month *Globe and Mail* investigation, "companies often don't test their oil shipments for explosiveness before sending the trains." Little wonder then that within a year of Lac-Mégantic, several more oil-laden trains went up in flames, including one in Casselton, North Dakota, one outside a village in northwest New Brunswick, and one in downtown Lynchburg, Virginia.[87]

In a sane world, this cluster of disasters, layered on top of the larger climate crisis, would have prompted significant political change. Caps and moratoriums would have been issued, and the shift away from extreme energy would have begun. The fact that nothing of the sort has happened, and that permits and leases are still being handed out for ever more dangerous extractive activities, is at least partly due to old-fashioned corruption—of both the legal and illegal varieties.

A particularly lurid episode was revealed a year and a half before the BP disaster. An internal U.S. government report pronounced that what was then called the

Minerals Management Service—the division of the U.S. Interior Department charged with collecting royalty payments from the oil and gas industry—suffered from "a culture of ethical failure." Not only had officials repeatedly accepted gifts from oil industry employees but, according to a report by the department's inspector general, several officials "frequently consumed alcohol at industry functions, had used cocaine and marijuana, and had sexual relationships with oil and gas company representatives." For a public that had long suspected that their public servants were in bed with the oil and gas lobby, this was pretty graphic proof.[88]

Little wonder, then, that a 2013 Harris poll found that a paltry 4 percent of U.S. respondents believe oil companies are "honest and trustworthy" (only the tobacco industry fared worse). That same year, Gallup polled Americans about their opinions of twenty-five industries, including banking and government. No industry was more disliked than the oil and gas sector. A 2012 poll in Canada, meanwhile, asked Canadians to rate each of eleven groups on their trustworthiness on "energy issues." Oil and gas firms and energy executives took the bottom two slots, well below academics (the most trusted group), as well as environmental and community groups (which also rated positively). And in an EU-wide survey that same year, participants were polled on their impressions of eleven different sectors and asked if they "make efforts to behave responsibly towards society"—along with finance and banking, mining and oil and gas companies again came in last place.[89]

Hard realities like these have posed a challenge to the highly paid spin doctors employed by the extractive industries, the ones who had grown accustomed to being able to gloss over pretty much any controversy with sleek advertising showing blond children running through fields and multiracial actors in lab coats expressing concern about the environment. These days that doesn't cut it. No matter how many millions are spent on advertising campaigns touting the modernity of the tar sands or the cleanliness of natural gas, it's clear that a great many people are no longer being persuaded. And those proving most resistant are the ones whose opinions matter most: the people living on lands that the extractive companies need to access in order to keep their astronomical profits flowing.

The Return of Precaution

For decades, the environmental movement spoke the borrowed language of risk assessment, diligently working with partners in business and government to balance dangerous levels of pollution against the need for profit and economic growth. These assumptions about acceptable levels of risk were taken so deeply for granted that they formed the basis of the official climate change discussion. Action necessary to save humanity from the very real risk of climate chaos was coolly balanced against the risk such action would pose to GDPs, as if economic growth still has a meaning on a planet convulsing in serial disasters.

But in Blockadia, risk assessment has been abandoned on the barricaded roadside, replaced by a resurgence of the precautionary principle—which holds that when human health and the environment are significantly at risk, perfect scientific certainty is not required before taking action. Moreover the burden of proving that a practice is safe should not be placed on the public that could be harmed.

Blockadia is turning the tables, insisting that it is up to industry to prove that its methods are safe—and in the era of extreme energy that is something that simply cannot be done. To quote the biologist Sandra Steingraber, "Can you provide an example of an ecosystem on which was laid down a barrage of poisons, and terrible and unexpected consequences for human beings were not the result?"[90]

The fossil fuel companies, in short, are no longer dealing with those Big Green groups that can be silenced with a generous donation or a conscience-clearing carbon offset program. The communities they are facing are, for the most part, not looking to negotiate a better deal—whether in the form of local jobs, higher royalties, or better safety standards. More and more, these communities are simply saying "No." No to the pipeline. No to Arctic drilling. No to the coal and oil trains. No to the heavy hauls. No to the export terminal. No to fracking. And not just "Not in My Backyard" but, as the French anti-fracking activists say: *Ni ici, ni ailleurs*—neither here, nor elsewhere. In other words: no new carbon frontiers.

Indeed the trusty slur NIMBY has completely lost its bite. As Wendell Berry says, borrowing words from E. M. Forster, conservation "turns on affection"—and if each of us loved our homeplace enough to defend it, there would be no ecological crisis, no place could ever be written off as a sacrifice zone.[91] We would simply have no choice but to adopt nonpoisonous methods of meeting our needs.

This sense of moral clarity, after so many decades of chummy green partnerships, is the real shock for the extractive industries. The climate movement has found its nonnegotiables. This fortitude is not just building a large and militant

resistance to the companies most responsible for the climate crisis. As we will see in the next chapter, it is also delivering some of the most significant victories the environmental movement has seen in decades.

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[*] The villagers insist their struggle is committed to nonviolence and blame outsiders or even provocateurs for the arson.

[*] Maxime Combes, a French economist and anti-fracking activist, observes, "The scene in the film where landowner Mike Markham ignites gas from a water faucet in his home with a cigarette lighter due to natural gas exploration in the area has had a far greater impact against fracking than any report or speech."

[*] In 2008, 1,600 ducks died after they landed in these dangerous waters during a storm; another incident led to the deaths of over five hundred more two years later. (A biologist investigating the later incident for the Alberta government explained that it was not industry's fault that the ducks were forced to land during a violent storm—then pointed out, without apparent irony, that such storms will become more frequent as a result of climate change.)

[*] And their claims are indeed absurd: according to an independent study published in 2014 in the *Proceedings of the National Academy of Sciences*, for example, emissions of potentially toxic pollutants from the tar sands "are two to three orders-of-magnitude larger than those reported" by companies to their regulators. The discrepancy is evident in actual measurements of these pollutants in the air near tar sands activities. The study's coauthor, Frank Wania, an environmental scientist at the University of Toronto, described the official estimates as "inadequate and incomplete" and made the commonsense observation, "Only with a complete and accurate account of the emissions is it actually possible to make a meaningful assessment of the environmental impact and of the risk to human health."

10

LOVE WILL SAVE THIS PLACE

Democracy, Divestment, and the Wins So Far

"I believe that the more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction."

–Rachel Carson, 1954[1]

"What good is a mountain just to have a mountain?"

–Jason Bostic, Vice President of the West Virginia Coal Association, 2011[2]

On a drizzly British Columbia day in April 2012, a twenty-seven-seat turboprop plane landed at the Bella Bella airport, which consists of a single landing strip leading to a clapboard building. The passengers descending from the blue-and-white Pacific Coastal aircraft included the three members of a review panel created by the Canadian government. They had made the 480-kilometer journey from Vancouver to this remote island community, a place of deep fjords and lush evergreen forests reaching to the sea, to hold public hearings about one of the most contentious new pieces of fossil fuel infrastructure in North America: Enbridge's proposed Northern Gateway pipeline.

Bella Bella is not directly on the oil pipeline's route (that is 200 kilometers even further north). However, the Pacific ocean waters that are its front yard are in the treacherous path of the oil tankers that the pipeline would load up with diluted tar sands oil—up to 75 percent more oil in some supertankers than the*Exxon Valdez* was carrying in 1989 when it spilled in Alaska's Prince William Sound, devastating marine life and fisheries across the region.[3] A spill in these waters could be even more damaging, since the remoteness would likely make reaching an accident site difficult, especially during winter storms.

The appointed members of the Joint Review Panel—one woman and two men, aided by support staff—had been holding hearings about the pipeline impacts for months now and would eventually present the federal government with their recommendation on whether the project should go ahead. Bella Bella, whose population is roughly 90 percent Heiltsuk First Nation, was more than ready for them.

A line of Heiltsuk hereditary chiefs waited on the tarmac, all dressed in their full regalia: robes embroidered with eagles, salmon, orcas, and other creatures of these seas and skies; headdresses adorned with animal masks and long trails of white ermine fur, as well as woven cedar basket hats. They greeted the visitors with a welcome dance, noisemakers shaking in their hands and rattling from the aprons of their robes, while a line of drummers and singers backed them up. On the other side of the chain link fence was a large crowd of demonstrators carrying anti-pipeline signs and canoe paddles.

Standing a respectful half step behind the chiefs was Jess Housty, a slight twenty-five-year-old woman who had helped to galvanize the community's engagement with the panel (and would soon be elected to the Heiltsuk Tribal Council as its youngest member). An accomplished poet who created Bella Bella's first and only library while she was still a teenager, Housty described the scene at the airport as "the culmination of a huge planning effort driven by our whole community."[4]

And it was young people who had led the way, turning the local school into a hub of organizing. Students had worked for months in preparation for the hearings. They researched the history of pipeline and tanker spills, including the 2010 disaster on the Kalamazoo River, noting that Enbridge, the company responsible, was the same one pushing the Northern Gateway pipeline. The teens were also keenly interested in the *Exxon Valdez* disaster since it took place in a northern landscape similar to their own. As a community built around fishing and other ocean harvesting, they were alarmed to learn about how the salmon of Prince William Sound had become sick in the years after the spill, and how herring stocks had completely collapsed (they are still not fully recovered, more than two decades later).

The students contemplated what such a spill would mean on their coast. If the sockeye salmon, a keystone species, were threatened, it would have a cascade effect—since they feed the killer whales and white-sided dolphins whose dorsal fins regularly pierce the water's surface in nearby bays, as well as the seals and sea lions that bark and sunbathe on the rocky outcroppings. And when the fish return

to the freshwater rivers and streams to spawn, they feed the eagles, the black bears, the grizzlies, and the wolves, whose waste then provides the nutrients to the lichen that line the streams and riverbanks, as well as to the great cedars and Douglas firs that tower over the temperate rainforest. It's the salmon that connect the streams to the rivers, the river to the sea, the sea back to the forests. Endanger salmon and you endanger the entire ecosystem that depends on them, including the Heiltsuk people whose ancient culture and modern livelihood is inseparable from this intricate web of life.

Bella Bella's students wrote essays on these themes, prepared to present testimony, and painted signs to greet the panel members. Some went on a forty-eight-hour hunger strike to dramatize the stakes of losing their food source. Teachers observed that no issue had ever engaged the community's young people like this—some even noticed a decline in depression and drug use. That's a very big deal in a place that not long ago suffered from a youth suicide epidemic, the legacy of scarring colonial policies, including generations of children—the great-grandparents, grandparents, and sometimes the parents of today's teens and young adults—being taken from their families and placed in church-run residential schools where abuse was rampant.

Housty recalls, "As I stood behind our chiefs [on the tarmac], I remember thinking how the community had grown around the issue from the first moment we heard rumblings around Enbridge Northern Gateway. The momentum had built and it was strong. As a community, we were prepared to stand up with dignity and integrity to be witnesses for the lands and waters that sustained our ancestors—that sustain us—that we believe should sustain our future generations."

After the dance, the panel members ducked into a white minivan that took them on the five-minute drive into town. The road was lined with hundreds of residents, including many children, holding their handmade poster-board signs. "Oil Is Death," "We Have the Moral Right to Say No," "Keep Our Oceans Blue," "Our Way of Life Cannot Be Bought!," "I Can't Drink Oil." Some held drawings of orcas, salmon, even kelp. Many of the signs simply said: "No Tankers." One man thought the panel members weren't bothering to look out the window, so he thumped the side of the van as it passed and held his sign up to the glass.

By some counts, a third of Bella Bella's 1,095 residents were on the street that day, one of the largest demonstrations in the community's history.[5] Others participated in different ways: by harvesting and preparing food for the evening feast, where the panel members were to be honored guests. It was part of the Heiltsuk's tradition of hospitality but it was also a way to show the visitors the

foods that would be at risk if just one of those supertankers were to run into trouble. Salmon, herring roe, halibut, oolichan, crab, and prawns were all on the menu.

Similar scenes had played out everywhere the panel traveled in British Columbia: cities and towns came out in droves, voicing unanimous or near unanimous opposition to the project. Usually First Nations were front and center, reflecting the fact that the province is home to what is arguably the most powerful Indigenous land rights movement in North America, evidenced by the fact that roughly 80 percent of its land remains "unceded," which means that it has never been relinquished under any treaty nor has it ever been claimed by the Canadian state through an act of war.[6]

Yet there was clearly something about the passion of Bella Bella's greeting that unnerved the panel members. The visitors refused the invitation to the feast that evening, and Chief Councilor Marilyn Slett was put in the unenviable position of having to take the microphone and share a letter she had just received from the Joint Review Panel. It stated that the pipeline hearings for which the assembled crowd had all been preparing for months were canceled. Apparently the demonstration on the way from the airport had made the visitors feel unsafe and, the letter stated, "The Panel cannot be in a situation where it is unsure that the crowd will be peaceful." It later emerged that the sound of that single man thumping the side of the van had somehow been mistaken for gunfire. (Police in attendance asserted that the demonstrations had been nonviolent and that there was never any security threat.)[7]

Housty said the news of the cancellation had a "physical impact. We had done everything according to our teachings, and to feel the back of someone's hand could hardly have been more of an insult." In the end, the hearings went ahead but a day and a half of promised meeting time was lost, depriving many community members of their hope of being heard in person.[*8]

What shocked many of Bella Bella's residents was not just the weird and false accusation of violence; it was the extent to which the entire spirit of their actions seemed to have been misunderstood. When the panel members looked out the van window, they evidently saw little more than a stereotypical mob of angry Indians, wanting to vent their hatred on anyone associated with the pipeline. But to the people on the other side of the glass, holding their paddles and fish paintings, the demonstration had not primarily been about anger or hatred. It had been about love—a collective and deeply felt expression of love for their breathtaking part of the world.

As the young people of this community explained when they finally got the chance, their health and identity were inextricably bound up in their ability to follow in the footsteps of their forebears—fishing and paddling in the same waters, collecting kelp in the same tidal zones in the outer coastal islands, hunting in the same forests, and collecting medicines in the same meadows. Which is why Northern Gateway was seen not simply as a threat to the local fishery but as the possible undoing of all this intergenerational healing work. And therefore as another wave of colonial violence.

When Jess Housty testified before the Enbridge Gateway review panel (she had to travel for a full day to Terrace, British Columbia to do it), she put this in unequivocal terms.

> When my children are born, I want them to be born into a world where hope and transformation are possible. I want them to be born into a world where stories still have power. I want them to grow up able to be Heiltsuk in every sense of the word. To practice the customs and understand the identity that has made our people strong for hundreds of generations.
>
> That cannot happen if we do not sustain the integrity of our territory, the lands and waters, and the stewardship practices that link our people to the landscape. On behalf of the young people in my community, I respectfully disagree with the notion that there is any compensation to be made for the loss of our identity, for the loss of our right to be Heiltsuk.[9]

The power of this ferocious love is what the resource companies and their advocates in government inevitably underestimate, precisely because no amount of money can extinguish it. When what is being fought for is an identity, a culture, a beloved place that people are determined to pass on to their grandchildren, and that their ancestors may have paid for with great sacrifice, there is nothing companies can offer as a bargaining chip. No safety pledge will assuage; no bribe will be big enough. And though this kind of connection to place is surely strongest in Indigenous communities where the ties to the land go back thousands of years, it is in fact Blockadia's defining feature.

I saw it shine brightly in Halkidiki, Greece, in the struggle against the gold mine. There, a young mother named Melachrini Liakou—one of the movement's most tireless leaders—told me with unswerving confidence that the difference between the way she saw the land, as a fourth-generation farmer, and the way the mining company saw the same patch of earth, was that, "I am a part of the land. I respect it, I love it and I don't treat it as a useless object, as if I want to take something out of it and then the rest will be waste. Because I want to live here this year, next year,

and to hand it down to the generations to come. In contrast, Eldorado, and any other mining company, they want to devour the land, to plunder it, to take away what is most precious for themselves."[10] And then they would leave behind, she said, "a huge chemical bomb for all mankind and nature."

Alexis Bonogofsky (who had told me what a "huge mistake" the oil companies made in trying to bring their big rigs along Highway 12) speaks in similar terms about the fight to protect southeastern Montana from mining companies like Arch Coal. But for Bonogofsky, a thirty-three-year-old goat rancher and environmentalist who does yoga in her spare time, it's less about farming than deer hunting. "It sounds ridiculous but there's this one spot where I can sit on the sandstone rock and you know that the mule deer are coming up and migrating through, you just watch these huge herds come through, and you know that they've been doing that for thousands and thousands of years. And you sit there and you feel connected to that. And sometimes it's almost like you can feel the earth breathe." She adds: "That connection to this place and the love that people have for it, that's what Arch Coal doesn't get. They underestimate that. They don't understand it so they disregard it. And that's what in the end will save that place. Is not the hatred of the coal companies, or anger, but love will save that place."[11] This is also what makes Blockadia conflicts so intensely polarized. Because the culture of fossil fuel extraction is—by both necessity and design—one of extreme rootlessness. The workforce of big rig drivers, pipefitters, miners, and engineers is, on the whole, highly mobile, moving from one worksite to the next and very often living in the now notorious "man camps"—self-enclosed army-base-style mobile communities that serve every need from gyms to movie theaters (often with an underground economy in prostitution).

Even in places like Gillette, Wyoming, or Fort McMurray, Alberta, where extractive workers may stay for decades and raise their kids, the culture remains one of transience. Almost invariably, workers plan to leave these blighted places as soon as they have saved enough money—enough to pay off student loans, to buy a house for their families back home, or, for the really big dreamers, enough to retire. And with so few well-paying blue-collar jobs left, these extraction jobs are often the only route out of debt and poverty. It's telling that tar sands workers often discuss their time in northern Alberta as if it were less a job than a highly lucrative jail term: there's "the three-year plan" (save $200,000, then leave); "the five-year-plan" (put away half a million); "the ten-year-plan" (make a million and retire at thirty-five). Whatever the details (and however unrealistic, given how much money disappears in the city's notorious party scene), the plan is always

pretty much the same: tough it out in Fort Mac (or Fort McMoney as it is often called), then get the hell out and begin your real life. In one survey, 98 percent of respondents in the tar sands area said they planned to retire somewhere else.[12]

There is a real sadness to many of these choices: beneath the bravado of the bar scene are sky-high divorce rates due to prolonged separations and intense work stress, soaring levels of addiction, and a great many people wishing to be anywhere but where they are. This kind of disassociation is part of what makes it possible for decent people to inflict the scale of damage to the land that extreme energy demands. A coalfield worker in Gillette, Wyoming, for instance, told me that to get through his workdays, he had trained himself to think of the Powder River Basin as "another planet."[13] (The moonscape left behind by strip mining no doubt made this mental trick easier).

These are perfectly understandable survival strategies—but when the extractive industry's culture of structural transience bumps up against a group of deeply rooted people with an intense love of their homeplace and a determination to protect it, the effect can be explosive.

Love and Water

When these very different worlds collide, one of the things that seems to happen is that, as in Bella Bella, communities begin to cherish what they have—and what they stand to lose—even more than before the extractive threat arrived. This is particularly striking because many of the people waging the fiercest anti-extraction battles are, at least by traditional measures, poor. But they are still determined to defend a richness that our economy has not figured out how to count. "Our kitchens are filled with homemade jams and preserves, sacks of nuts, crates of honey and cheese, all produced by us," Doina Dediu, a Romanian villager protesting fracking, told a reporter. "We are not even that poor. Maybe we don't have money, but we have clean water and we are healthy and we just want to be left alone."[14]

So often these battles seem to come to this stark choice: water vs. gas. Water vs. oil. Water vs. coal. In fact, what has emerged in the movement against extreme extraction is less an anti–fossil fuels movement than a pro-water movement.

I was first struck by this in December 2011 when I attended a signing ceremony for the Save the Fraser Declaration, the historic Indigenous people's declaration pledging to prevent the Northern Gateway pipeline and any other tar sands project of its kind from accessing British Columbia territory. More than 130 First Nations

have signed, along with many nonIndigenous endorsers. The ceremony was held at the Vancouver Public Library, with several chiefs present to add their names. Among those addressing the bank of cameras that day was Marilyn Baptiste, then elected chief of Xeni Gwet'in, one of the communities of the Tsilhqot'in First Nation. She introduced herself, her people, and their stake in the fight by naming interconnected bodies of water: "We are at the headwaters of Chilko, which is one of the largest wild salmon runs, that is also part of the Taseko, that drains into the Chilko, the Chilko into the Chilcotin, and into the Fraser. It's common sense for all of our people to join together."[15]

The point of drawing this liquid map was clear to all present: of course all of these different nations and groups would join together to fight the threat of an oil spill—they are all already united by water; by the lakes and rivers, streams and oceans that drain into one another. And in British Columbia, the living connection among all of these waterways is the salmon, that remarkably versatile traveler, which moves through fresh- and saltwater and back again during its life cycle. That's why the declaration that was being signed was not called the "Stop the Tankers and Pipelines Declaration" but rather the "Save the Fraser Declaration"—the Fraser, at almost 1,400 kilometers, being the longest river in B.C. and home to its most productive salmon fishery. As the declaration states: "A threat to the Fraser and its headwaters is a threat to all who depend on its health. We will not allow our fish, animals, plants, people, and ways of life to be placed at risk.… We will not allow the proposed Enbridge Northern Gateway Pipelines, or similar Tar Sands projects, to cross our lands, territories and watersheds, or the ocean migration routes of Fraser River salmon."[16]

If the tar sands pipeline threatens to become an artery of death, carrying poison across an estimated one thousand waterways, then these interconnected bodies of water that Chief Baptiste was mapping are arteries of life, flowing together to bind all of these disparate communities in common purpose.[17]

The duty to protect water doesn't just unite opposition to this one pipeline; it is the animating force behind every single movement fighting extreme extraction. Whether deepwater drilling, fracking, or mining; whether pipelines, big rigs, or export terminals, communities are terrified about what these activities will do to their water systems. This fear is what binds together the southeastern Montana cattle ranchers with the Northern Cheyenne with the Washington State communities fighting coal trains and export terminals. Fear of contaminated drinking water is what kick-started the anti-fracking movement (and when a proposal surfaced that would allow the drilling of roughly twenty thousand

fracking wells in the Delaware River Basin—the source of freshwater for fifteen million Americans—it is what kicked the movement squarely into the U.S. mainstream).[18]

The movement against Keystone XL would, similarly, never have resonated as powerfully as it did had TransCanada not made the inflammatory decision to route the pipeline through the Ogallala Aquifer—a vast underground source of freshwater beneath the Great Plains that provides drinking water to approximately two million people and supplies roughly 30 percent of the country's irrigation groundwater.[19]

In addition to the contamination threats, almost all these extractive projects also stand out simply for how much water they require. For instance, it takes 2.3 barrels of water to produce a single barrel of oil from tar sands mining—much more than the 0.1 to 0.3 barrels of water needed for each barrel of conventional crude. Which is why the tar sands mines and upgrading plants are surrounded by those giant tailings "ponds" visible from space. Fracking for both shale gas and "tight oil" similarly requires far more water than conventional drilling and is much more water-intensive than the fracking methods used in the 1990s. According to a 2012 study, modern fracking "events" (as they are called) use an average of five million gallons of water—"70 to 300 times the amount of fluid used in traditional fracking." Once used, much of this water is radioactive and toxic. In 2012, the industry created 280 billion gallons of such wastewater in the U.S. alone—"enough to flood all of Washington DC beneath a 22ft deep toxic lagoon," as *The Guardian* noted.[20]

In other words, extreme energy demands that we destroy a whole lot of the essential substance we need to survive—water—just to keep extracting more of the very substances threatening our survival and that we can power our lives without.

This is coming, moreover, at a time when freshwater sources are imperiled around the world. Indeed, the water used in extraction operations often comes from aquifers that are already depleted from years of serial droughts, as is the case in southern California, where prospectors are eyeing the enormous Monterey Shale, and in Texas, where fracking has skyrocketed in recent years. Meanwhile, the Karoo—an arid and spectacular region of South Africa that Shell is planning to frack—literally translates as "land of the great thirst." Which helps explain why Oom Johannes Willemse, a local spiritual leader, says, "Water is so holy. If you don't have water, you don't have anything worth living for." He adds, "I will fight to the death. I won't allow this water to be destroyed."[21]

The fight against pollution and climate change can seem abstract at times; but wherever they live, people will fight for their water. Even die for it.

"Can we live without water?" the anti-fracking farmers chant in Pungesti, Romania.

"No!"

"Can we live without Chevron?"

"Yes!"[22]

These truths emerge not out of an abstract theory about "the commons" but out of lived experience. Growing in strength and connecting communities in all parts of the world, they speak to something deep and unsettled in many of us. We know that we are trapped within an economic system that has it backward; it behaves as if there is no end to what is actually finite (clean water, fossil fuels, and the atmospheric space to absorb their emissions) while insisting that there are strict and immovable limits to what is actually quite flexible: the financial resources that human institutions manufacture, and that, if imagined differently, could build the kind of caring society we need. Anni Vassiliou, a youth worker who is part of the struggle against the Eldorado gold mine in Greece, describes this as living in "an upside down world. We are in danger of more and more floods. We are in danger of never, here in Greece, never experiencing spring and fall again. And they're telling us that we are in danger of exiting the Euro. How crazy is that?"[23] Put another way, a broken bank is a crisis we can fix; a broken Arctic we cannot.

Early Wins

It's not yet clear which side will win many of the struggles outlined in these pages—only that the companies in the crosshairs are up against far more than they bargained for. There have, however, already been some solid victories, too many to fully catalogue here.

For instance, activists have won fracking bans or moratoria in dozens of cities and towns and in much larger territories too. Alongside France, countries with moratoria include Bulgaria, the Netherlands, the Czech Republic, and South Africa (though South Africa has since lifted the ban). Moratoria or bans are also in place in the states and provinces of Vermont, Quebec, as well as Newfoundland and Labrador (as of early 2014, New York's contentious moratorium still held but it looked shaky). This track record is all the more remarkable considering that so much local anti-fracking activism has not received foundation funding, and is

instead financed the old-fashioned way: by passing the hat at community events and with countless volunteer hours.

And some victories against fossil fuel extraction receive almost no media attention, but are significant nonetheless. Like the fact that in 2010 Costa Rica passed a landmark law banning new open-pit mining projects anywhere in the country. Or that in 2012, the residents of the Colombian archipelago of San Andrés, Providencia, and Santa Catalina successfully fended off government plans to open the waters around their beautiful islands to offshore oil drilling. The region is home to one of the largest coral reefs in the Western Hemisphere and as one account of the victory puts it, what was established was the fact that coral is "more important than oil."[*24]

And then there is the wave of global victories against coal. Under mounting pressure, the World Bank as well as other large international funders have announced that they will no longer offer financing to coal projects except in exceptional circumstances, which could turn out to be a severe blow to the industry if other financiers follow suit. In Gerze, Turkey, a major proposed coal plant on the Black Sea was scuttled under community pressure. The Sierra Club's hugely successful "Beyond Coal" campaign has, along with dozens of local partner organizations, succeeded in retiring 170 coal plants in the United States and prevented over 180 proposed plants since 2002.[25]

The campaign to block coal export terminals in the Pacific Northwest has similarly moved from strength to strength. Three of the planned terminals—one near Clatskanie, Oregon, another in Coos Bay, Oregon, and another in Hoquiam, Washington—have already been nixed, the result of forceful community activism, much of it organized by the Power Past Coal coalition. Several port proposals are still pending but resistance is fierce, particularly to the largest of the bunch, just outside Bellingham, Washington. "It's not a fun time to be in the coal industry these days," said Nick Carter, president and chief operating officer of the U.S. coal company Natural Resource Partners. "It's not much fun to get up every day, go to work and spend your time fighting your own government."[26]

In comparison, the actions against the various tar sands pipelines have not yet won any clear victories, only a series of very long delays. But those delays matter a great deal because they have placed a question mark over the capacity of Alberta's oil patch to make good on its growth projections. And if there is one thing billion-dollar investors hate, it's political uncertainty. If Alberta's landlocked oil patch can't guarantee its investors a reliable route to the sea where bitumen can be loaded onto tankers, then, as the province's former minister of energy Ron

Liepert put it, "the investment is going to dry up." The head of one of the largest oil companies in the tar sands confirmed this in January 2014. "If there were no more pipeline expansions, I would have to slow down," Cenovus CEO Brian Ferguson said. He clearly considered this some kind of threat, but from a climate perspective it sounded like the best news in years.[27]

Even if these tactics succeed only in slowing expansion plans, the delays will buy time for clean energy sources to increase their market share and to be seen as more viable alternatives, weakening the power of the fossil fuel lobby. And, even more significantly, the delays give residents of the largest markets in Asia a window of opportunity to strengthen their own demands for a clean energy revolution.

Already, these demands are spreading so rapidly that it isn't at all clear how long the market for new coal-fired plants and extra-dirty gasoline in Asia will continue to expand. In India, Blockadia-style uprisings have been on full display in recent years, with people's movements against coal-fired power plants significantly slowing the rush to dirty energy in some regions. The southeastern state of Andhra Pradesh has been the site of several iconic struggles, like one in the village of Kakarapalli, surrounded by rice patties and coconut groves, where local residents can be seen staffing a semipermanent checkpoint under a baobab tree at the entrance to town. The encampment chokes off the only road leading to a half-built power plant where construction was halted amidst protests in 2011. In nearby Sompeta, another power plant proposal was stopped by a breakthrough alliance of urban middle-class professionals and subsistence farmers and fishers who united to protect the nearby wetlands. After police charged a crowd of protesters in 2010, shooting dead at least two people, a national uproar forced the National Environment Appellate Authority to revoke the permit for the project.[28] The community remains vigilant, with a daily rotating hunger strike entering its 1,500th day at the beginning of 2014.

China, meanwhile, is in the midst of a very public and emotional debate about its crisis levels of urban air pollution, in large part the result of the country's massive reliance on coal. There have been surprisingly large and militant protests against the construction of new coal-fired plants, most spectacularly in Haimen, a small city in Guangdong Province. In December 2011, as many as thirty thousand residents surrounded a government building and blocked a highway to protest plans to expand a coal-fired power plant. Citing concerns about cancer and other health problems blamed on the existing plant, the demonstrators withstood days of attacks by police, including tear gas and reported beatings with batons. They were

there to send the message, as one protester put it, that, "This is going to affect our future generations. They still need to live." The plant expansion was suspended.[29]

Chinese peasants who rely on traditional subsistence activities like agriculture and fishing have a history of militant uprisings against industrial projects that cause displacement and disease, whether toxic factories, highways, or mega-dams. Very often these actions attract severe state repression, including deaths in custody of protest leaders. The projects usually go ahead regardless of the opposition, though there have been some notable successes.

What has changed in China in recent years—and what is of paramount concern to the ruling party—is that the country's elites, the wealthy winners in China's embrace of full-throttle capitalism, are increasingly distressed by the costs of industrialization. Indeed, Li Bo, who heads Friends of Nature, the oldest environmental organization in China, describes urban air pollution as "a superman for Chinese environment issues," laughing at the irony of an environmentalist having "to thank smog." The reason, he explains, is that the elites had been able to insulate themselves from previous environmental threats, like baby milk and water contamination, because "the rich, the powerful, have special channels of delivery, safer products [delivered] to their doorsteps." But no matter how rich you are, there is no way to hide from the "blanket" of toxic air. "Nobody can do anything for special [air] delivery," he says. "And that's the beauty of it."[30]

To put the health crisis in perspective, the World Health Organization sets the guideline for the safe presence of fine particles of dangerous air pollutants (known as PM_{25}) at 25 micrograms or less per cubic meter; 250 is considered hazardous by the U.S. government. In January 2014, in Beijing, levels of these carcinogens hit 671. The ubiquitous paper masks haven't been enough to prevent outbreaks of respiratory illness, or to protect children as young as eight from being diagnosed with lung cancer. Shanghai, meanwhile, has introduced an emergency protocol in which kindergartens and elementary schools are automatically shut down and all large-scale outdoor gatherings like concerts and soccer games are canceled when the levels of particulate matter in the air top 450 micrograms per cubic meter. No wonder Chen Jiping, a former senior Communist Party official, now retired, admitted in March 2013 that pollution is now the single greatest cause of social unrest in the country, even more than land disputes.[31]

China's unelected leaders have long since deflected demands for democracy and human rights by touting the ruling party's record of delivering galloping economic growth. As Li Bo puts it, the rhetoric was always, "We get rich first, we deal with

the environment problems second." That worked for a long time, but now, he says, "their argument has all of a sudden suffocated in the smog."

The pressure for a more sustainable development path has forced the government to cut its targeted growth to a rate lower than China had experienced in more than a decade, and to launch huge alternative energy programs. Many dirty-energy projects, meanwhile, have been canceled or delayed. In 2011, a third of the Chinese coal-fired power plants that had been approved for construction "were stalled and investments in new coal plants weren't even half the level they were in 2005," according to Justin Guay, associate director of the Sierra Club's International Climate Program. "Even better, China actually closed down over 80 gigawatts of coal plants between 2001—2010 and is planning to phase out another 20 GW. To put that in perspective that's roughly the size of *all* electricity sources in Spain, home to the world's 11th largest electricity sector." (In an effort to reduce smog, the government is also exploring the potential for natural gas fracking, but in an earthquake-prone country with severe water shortages, it's a plan unlikely to quell unrest.)[32]

All this pushback from within China is of huge significance to the broader fossil-fuel resistance, from Australia to North America. It means that if tar sands pipelines and coal export terminals can be held off for just a few more years, the market for the dirty products the coal and oil companies are trying to ship to Asia could well dry up. Something of a turning point took place in July 2013 when the multinational investment banking firm Goldman Sachs published a research paper titled, "The Window for Thermal Coal Investment Is Closing." Less than six months later, Goldman Sachs sold its 49 percent stake in the company that is developing the largest of the proposed coal export terminals, the one near Bellingham, Washington, having apparently concluded that window had already closed.[33]

These victories add up: they have kept uncountable millions of tons of carbon and other greenhouse gases out of the atmosphere. Whether or not climate change has been a primary motivator, the local movements behind them deserve to be recognized as unsung carbon keepers, who, by protecting their beloved forests, mountains, rivers, and coastlines, are helping to protect all of us.

Fossil Free: The Divestment Movement

Climate activists are under no illusion that shutting down coal plants, blocking tar sands pipelines, and passing fracking bans will be enough to lower emissions as rapidly and deeply as science demands. There are just too many extraction operations already up and running and too many more being pushed simultaneously. And oil multinationals are hyper-mobile—they move wherever they can dig.

With this in mind, discussions are under way to turn the "no new fossil frontiers" principle behind these campaigns into international law. Proposals include a Europe-wide ban on fracking (in 2012, more than a third of the 766 members of the European Parliament cast votes in favor of an immediate moratorium).[34] There is a growing campaign calling for a worldwide ban on offshore drilling in the sensitive Arctic region, as well as in the Amazon rainforest. And activists are similarly beginning to push for a global moratorium on tar sands extraction anywhere in the world, on the grounds that it is sufficiently carbon-intensive to merit transnational action.

Another tactic spreading with startling speed is the call for public interest institutions like colleges, faith organizations, and municipal governments to sell whatever financial holdings they have in fossil companies. The divestment movement emerged organically out of various Blockadia-style attempts to block carbon extraction at its source—specifically, out of the movement against mountaintop removal coal mining in Appalachia, which was looking for a tactic to put pressure on coal companies that had made it clear that they were indifferent to local opinion. Those local activists were later joined by a national and then international campaign spearheaded by 350.org, which extended the divestment call to include all fossil fuels, not just coal. The idea behind the tactic was to target not just individual unpopular projects but the logic that is driving this entire wave of frenetic, high-risk extraction.

The divestment campaign is based on the idea—outlined so compellingly by Bill McKibben—that anyone with a basic grasp of arithmetic can look at how much carbon the fossil fuel companies have in their reserves, subtract how much carbon scientists tell us we can emit and still keep global warming below 2 degrees Celsius, and conclude that the fossil fuelcompanies have every intention of pushing the planet beyond the boiling point.

These simple facts have allowed the student-led divestment movement to put the fossil fuel companies' core business model on trial, arguing that they have become rogue actors whose continued economic viability relies on radical climate

destabilization—and that, as such, any institution claiming to serve the public interest has a moral responsibility to liberate itself from these odious profits. "What the fossil fuel divestment movement is saying to companies is your fundamental business model of extracting and burning carbon is going to create an uninhabitable planet. So you need to stop. You need a new business model," explains Chloe Maxmin, coordinator of Divest Harvard.[35] And young people have a special moral authority in making this argument to their school administrators: these are the institutions entrusted to prepare them for the future; so it is the height of hypocrisy for those same institutions to profit from an industry that has declared war on the future at the most elemental level.

No tactic in the climate wars has resonated more powerfully. Within six months of the campaign's official launch in November 2012, there were active divestment campaigns on over three hundred campuses and in more than one hundred U.S. cities, states, and religious institutions. The demand soon spread to Canada, Australia, the Netherlands, and Britain. At the time of publication, thirteen U.S. colleges and universities had announced their intention to divest their endowments of fossil fuel stocks and bonds, and the leaders of more than twenty-five North American cities had made similar commitments, including San Francisco and Seattle. Around forty religious institutions had done the same. The biggest victory to date came in May 2014 when Stanford University—with a huge endowment worth $18.7 billion—announced it would be selling its coal stocks.[36]

Critics have been quick to point out that divestment won't bankrupt Exxon; if Harvard, with its nearly $33 billion endowment, sells its stock, someone else will snap it up. But this misses the power of the strategy: every time students, professors, and faith leaders make the case for divestment, they are chipping away at the social license with which these companies operate. As Sara Blazevic, a divestment organizer at Swarthmore College, puts it, the movement is "taking away the hold that the fossil fuel industry has over our political system by making it socially unacceptable and morally unacceptable to be financing fossil fuel extraction." And Cameron Fenton, one of the leaders of the divestment push in Canada, adds, "No one is thinking we're going to bankrupt fossil fuel companies. But what we can do is bankrupt their reputations and take away their political power."[37]

The eventual goal is to confer on oil companies the same status as tobacco companies, which would make it much easier to make other important demands—like bans on political donations from fossil fuel companies and on fossil fuel advertising on television (for the same public health reasons that we ban broadcast

cigarette ads). Crucially, it might even create the space for a serious discussion about whether these profits are so illegitimate that they deserve to be appropriated and reinvested in solutions to the climate crisis. Divestment is just the first stage of this delegitimization process, but it is already well under way.

None of this is a replacement for major policy changes that would regulate carbon reduction across the board. But what the emergence of this networked, grassroots movement means is that the next time climate campaigners get into a room filled with politicians and polluters to negotiate, there will be many thousands of people outside the doors with the power to amp up the political pressure significantly—with heightened boycotts, court cases, and more militant direct action should real progress fail to materialize. And that is a very significant shift indeed.

Already, the rise of Blockadia and the fossil fuel divestment movement is having a huge impact on the mainstream environmental community, particularly the Big Green groups that had entered into partnerships with fossil fuel companies (never mind The Nature Conservancy, with its own Texas oil and gas operation …). Not surprisingly, some of the big pro-corporate green groups view this new militancy as an unwelcome intrusion on their territory. When it comes to fracking in particular, groups like the Environmental Defense Fund have pointedly not joined grassroots calls for drilling bans and a rapid shift to 100 percent renewables, but have instead positioned themselves as brokers, offering up "best practices"—developed with industry groups—that will supposedly address local environmental concerns. (Even when locals make it abundantly clear that the only best practice they are interested in is an unequivocal ban on fracking.) "We fear that those who oppose all natural gas production everywhere are, in effect, making it harder for the U.S. economy to wean itself from dirty coal," charged EDF chief counsel Mark Brownstein.[38]

Predictably, these actions have provoked enormous tensions, with grassroots activists accusing the EDF of providing cover for polluters and undercutting their efforts.[*39]

But not all the Big Greens are reacting this way. Some—like Food & Water Watch, 350.org, Greenpeace, Rainforest Action Network, and Friends of the Earth—have been a central part of this new wave of anti-fossil fuel activism from the beginning. And for others that were more ambivalent, the rapid spread of a new, take-no-prisoners climate movement appears to have been a wake-up call; a reminder that they had strayed too far from first principles. This shift has perhaps been clearest at the Sierra Club, which, under the leadership of its former executive

director, Carl Pope, had attracted considerable controversy with such corporate-friendly actions as lending its logo to a line of "green" cleaning products owned by Clorox. Most damaging, Pope had been an enthusiastic supporter of natural gas and had appeared publicly (even lobbying on Capitol Hill) to sing the praises of the fossil fuel alongside Aubrey McClendon, then CEO of Chesapeake Energy—a company at the forefront of the hydraulic fracking explosion. Many local chapters, neck deep in battles against fracking, had been livid. And it would later emerge that the Sierra Club was, in this same period, secretly receiving many millions in donations from Chesapeake—one of the biggest controversies to hit the movement in decades.[†40]

A great deal has changed at the organization in the years since. The Sierra Club's new executive director, Michael Brune, put an end to the secret arrangement with Chesapeake and canceled the Clorox deal. (Though the money was replaced with a huge donation from Michael Bloomberg's foundation, which—though this was not known at the time—is significantly invested in oil and natural gas.) Brune was also arrested outside the White House in a protest against the construction of Keystone XL tar sands pipeline, breaking the organization's longtime ban on engaging in civil disobedience. Perhaps most significantly, the Sierra Club has joined the divestment movement. It now has a clear policy against investing in, or taking money from, fossil fuel companies and affiliated organizations.[41]

In April 2014, the Natural Resources Defense Council announced that it had helped create "the first equity global index tool that will exclude companies linked to exploration, ownership or extraction of carbon-based fossil fuel reserves. This new investment tool will allow investors who claim to be socially conscious, including foundations, universities, and certain pension groups, to align their investments with their missions." The rigor of this new tool remains to be tested (and I have my doubts) but it represents a shift from a year earlier, when the NRDC admitted that its own portfolio was invested in mutual funds and other mixed assets that did not screen for fossil fuels.[42]

The divestment movement is even (slowly) being embraced by some of the foundations that finance environmental activism. In January 2014, seventeen foundations pledged to divest from fossil fuels and invest in clean energy. While none of the Big Green donors—the Hewlett and Packard Foundations or the Walton Family Foundation, for example, not to mention Ford or Bloomberg—were on board, several smaller ones were, including the Wallace Global Fund and the Park Foundation, both major funders of anti–fossil fuel activism.[43]

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Up until quite recently, there was a widely shared belief that the big oil companies had such a fail-safe profit-making formula that none of this—not the divestment campaigns, not the on-the-ground resistance—would make any kind of dent in their power and wealth. That attitude needed some readjusting in January 2014 when Shell—which raked in more revenue than any company in the world in 2013—announced fourth-quarter profits that blindsided investors. Rather than the previous year's $5.6 billion quarter, Shell's new CEO, Ben van Beurden, announced that the company was now expecting just $2.9 billion, a jarring 48 percent drop.[44]

No single event could take the credit, but the company's various troubles were clearly adding up: its Arctic misadventures, the uncertainty in the tar sands, the persistent political unrest in Nigeria, and the growing chatter about a "carbon bubble" inflating its stock. Reacting to the news, the financial research company Sanford C. Bernstein & Co. noted that the plummet was "highly unusual for an integrated oil company" and admitted that it was "a bit shellshocked."[45]

The Democracy Crisis

As the anti-fossil fuel forces gain strength, extractive companies are beginning to fight back using a familiar tool: the investor protection provisions of free trade agreements. As previously mentioned, after the province of Quebec successfully banned fracking, the U.S.-incorporated oil and gas company Lone Pine Resources announced plans to sue Canada for at least $230 million under the North American Free Trade Agreement's rules on expropriation and "fair and equitable treatment." In arbitration documents, Lone Pine complained that the moratorium imposed by a democratically elected government amounted to an "arbitrary, capricious, and illegal revocation of the Enterprise's valuable right to mine for oil and gas under the St. Lawrence River." It also claimed (rather incredibly) that this occurred "with no cognizable public purpose"—not to mention "without a penny of compensation."[46]

It's easy to imagine similar challenges coming from any company whose extractive dreams are interrupted by a democratic uprising. And indeed after the Keystone XL pipeline was delayed yet again in April 2014, Canadian and TransCanada officials began hinting of a possible challenge to the U.S. government under NAFTA.

In fact, current trade and investment rules provide legal grounds for foreign corporations to fight virtually any attempt by governments to restrict the exploitation of fossil fuels, particularly once a carbon deposit has attracted investment and extraction has begun. And when the aim of the investment is explicitly to *export* the oil, gas, and coal and sell it on the world market—as is increasingly the case—successful campaigns to block those exports could well be met with similar legal challenges, since imposing "quantitative restrictions" on the free flow of goods across borders violates a fundamental tenet of trade law.[47]

"I really do think in order to combat the climate crisis, fundamentally we need to strip the power out of the fossil fuel industry, which raises enormous investment challenges in the trade context," says Ilana Solomon, the Sierra Club's trade expert. "As we begin to regulate the fossil fuel industry, for example in the United States, the industry may increasingly respond by seeking to export raw materials, whether it's coal, or natural gas, and under trade law it is literally illegal to stop the exports of those resources once they're mined. So it's very hard to stop."[48]

It is unsurprising, then, that as Blockadia victories mount, so do the corporate trade challenges. More investment disputes are being filed than ever before, with a great many initiated by fossil fuel companies—as of 2013, a full sixty out of 169 pending cases at the World Bank's dispute settlement tribunal had to do with the oil and gas or mining sectors, compared to a mere seven extraction cases throughout the entire 1980s and 1990s. According to Lori Wallach, director of Public Citizen's Global Trade Watch, of the more than $3 billion in compensation already awarded under U.S. free trade agreements and bilateral investment treaties, more than 85 percent "pertains to challenges against natural resource, energy, and environmental policies."[49]

None of this should be surprising. Of course the richest and most powerful companies in the world will exploit the law to try to stamp out real and perceived threats and to lock in their ability to dig and drill wherever they wish in the world. And it certainly doesn't help that many of our governments seem determined to hand out even more lethal legal weapons in the form of new and expanded trade deals, which companies, in turn, will use against governments' own domestic laws.

There may, however, be an unexpected upside to the aggressive use of trade law to quash environmental wins: after a decade lull when few seemed to be paying attention to the arcane world of free trade negotiations, a new generation of activists is once again becoming attuned to the democratic threat these treaties represent. Indeed there is now more public scrutiny and debate about trade agreements than there has been in years.

The point of this scrutiny, however, should not be to throw up our hands in the face of yet another obstacle standing in the way of sensible action on climate. Because while it is true that the international legal architecture of corporate rights is both daunting and insidious, the well-kept secret behind these deals is that they are only as powerful as our governments allow them to be. They are filled with loopholes and workarounds so any government that is serious about adopting climate polices that reduce emissions in line with science could certainly find a way to do so, whether by aggressively challenging trade rulings that side with polluters, or finding creative policy tweaks to get around them, or refusing to abide by rulings and daring reprisals (since these institutions cannot actually force governments to change laws), or attempting to renegotiate the rules. Put another way, the real problem is not that trade deals are allowing fossil fuel companies to challenge governments, it's that governments are not fighting back against these corporate challenges. And that has far less to do with any individual trade agreement than it does with the profoundly corrupted state of our political systems.

Beyond Fossilized Democracies

The process of taking on the corporate-state power nexus that underpins the extractive economy is leading a great many people to face up to the underlying democratic crisis that has allowed multinationals to be the authors of the laws under which they operate—whether at the municipal, state/provincial, national, or international level. It is this corroded state of our political systems—as fossilized as the fuel at the center of these battles—that is fast turning Blockadia into a grassroots pro-democracy movement.

Having the ability to defend one's community's water source from danger seems to a great many people like the very essence of self-determination. What is democracy if it doesn't encompass the capacity to decide, collectively, to protect something that no one can live without?

The insistence on this right to have a say in critical decisions relating to water, land, and air is the thread that runs through Blockadia. It's a sentiment summed up well by Helen Slottje, a former corporate lawyer who has helped around 170 New York towns to adopt anti-fracking ordinances: "Are you kidding me? You think you can just come into my town and tell me you're going to do whatever you want, wherever you want, whenever you want it, and I'm going to have no say? Who do you think you are?" I heard much the same from Marily Papanikolaou, a wavy-

haired Greek mountain-bike guide who had been perfectly happy raising her toddlers and leading tourists through forest trails, but now spends her spare time at anti-mine demonstrations and meetings. "I can't let anyone come in my village and try to do this and not ask me for my permission. *I*live here!" And you can hear something awfully similar from Texas landowners, irate that a Canadian pipeline company tried to use the law of eminent domain to gain access to their family land. "I just don't believe that a Canadian organization that appears to be building a pipeline for their financial gain has more right to my land than I do," said Julia Trigg Crawford, who has challenged TransCanada in court over its attempt to use her 650-acre ranch near Paris, Texas, which her grandfather purchased in 1948.[50]

And yet the most jarring part of the grassroots anti-extraction uprising has been the rude realization that most communities do appear to lack this power; that outside forces—a far-off central government, working hand-in-glove with transnational companies—are simply imposing enormous health and safety risks on residents, even when that means overturning local laws. Fracking, tar sands pipelines, coal trains, and export terminals are being proposed in many parts of the world where a clear majority of the population has made its opposition unmistakable, at the ballot box, through official consultation processes, and in the streets.

And yet consent seems beside the point. Again and again, after failing to persuade communities that these projects are in their genuine best interest, governments are teaming up with corporate players to roll over the opposition, using a combination of physical violence and draconian legal tools reclassifying peaceful activists as terrorists.[*51]

Nongovernmental organizations of all kinds find themselves under increasing surveillance, both by security forces and by corporations, often working in tandem. Pennsylvania's Office of Homeland Security hired a private contractor to gather intelligence on anti-fracking groups, which it proceeded to share with major shale gas companies. The same phenomenon is unfolding in France, where the utility EDF was convicted in 2011 of unlawfully spying on Greenpeace. In Canada, meanwhile, it was revealed that Chuck Strahl, then chair of the committee overseeing the country's spy agency, the Canadian Security Intelligence Service, was registered as a lobbyist for Enbridge, the company behind the hugely controversial Northern Gateway tar sands pipeline. That was a problem because the National Energy Board had directed the agency to assess the security threats to pipeline projects, which was thinly veiled code for spying on environmentalists and First Nations.[52]

Strahl's dual role raised the question of whether Enbridge could also gain access to the information gleaned. Then it came out that Strahl wasn't the only one who seemed to be working for the government and the fossil fuel companies simultaneously. As the CBC reported, "Half of the other Harper government appointees keeping an eye on the spies also have ties to the oil business"—including one member who sits on the board of Enbridge Gas NB, a wholly owned regional subsidiary of the pipeline company, and another who had been on TransCanada's board. Strahl resigned amid the controversy; the others did not.[53]

The collusion between corporations and the state has been so boorishly defiant that it's almost as if the communities standing in the way of these projects are viewed as little more than "overburden"—that ugliest of words used by the extractive industries to describe the "waste earth" that must be removed to access a tar sands or mineral deposit. Like the trees, soil, rocks, and clay that the industry's machines scrape up, masticate, and pile into great slag heaps, democracy is getting torn into rubble too, chewed up and tossed aside to make way for the bulldozers.

That was certainly the message when the three-person Joint Review Panel that had been so scared by the Heiltsuk community's welcome in Bella Bella finally handed down its recommendation to Canada's federal government. The Northern Gateway pipeline should go ahead, the panel announced. And though it enumerated 209 conditions that should be met before construction—from submiting caribou habitat protection plans to producing an updated inventory of waterway crossings "in both Adobe PDF and Microsoft Excel spreadsheet formats"—the ruling was almost universally interpreted as a political green light.[54]

Only two out of the over one thousand people who spoke at the panel's community hearings in British Columbia supported the project. One poll showed that 80 percent of the province's residents opposed having more oil tankers along their marine-rich coastline. That a supposedly impartial review body could rule in favor of the pipeline in the face of this kind of overwhelming opposition was seen by many in Canada as clear evidence of a serious underlying crisis, one far more about money and power than the environment. "Sadly, today's results are exactly what we expected," said anti-pipeline campaigner Torrance Coste, "proof that our democratic system is broken."[55]

In a sense, these are merely local manifestations of the global democratic crisis represented by climate change itself. As Venezuelan political scientist Edgardo Lander aptly puts it, "The total failure of climate negotiation serves to highlight the extent to which we now live in a post-democratic society. The interests of financial capital and the oil industry are much more important than the democratic

will of people around the world. In the global neoliberal society profit is more important than life." Or, as George Monbiot, *The Guardian's* indispensable environmental columnist, put it on the twenty-year anniversary of the Rio Earth Summit, "Was it too much to have asked of the world's governments, which performed such miracles in developing stealth bombers and drone warfare, global markets and trillion-dollar bailouts, that they might spend a tenth of the energy and resources they devoted to these projects on defending our living planet? It seems, sadly, that it was." Indeed, the failure of our political leaders to even attempt to ensure a safe future for us represents a crisis of legitimacy of almost unfathomable proportions.[56]

And yet a great many people have reacted to this crisis not by abandoning the promise of genuine self-government, but rather by attempting to make good on that promise in the spheres where they still have real influence. It's striking, for instance, that even as national governments and international agencies fail us, cities are leading the way on climate action around the world, from Bogotá to Vancouver. Smaller communities are also taking the lead in the democratic preparation for a climate-changed future. This can be seen most clearly in the fast-growing Transition Town movement. Started in 2006 in Totnes—an ancient market town in Devon, England, with a bohemian reputation—the movement has since spread to more than 460 locations in at least forty-three countries worldwide. Each Transition Town (and this may be an actual town or a neighborhood in a larger city) undertakes to design what the movement calls an "energy descent action plan"—a collectively drafted blueprint for lowering its emissions and weaning itself off fossil fuels. The process opens up rare spaces for participatory democracy, with neighbors packing consultation meetings at city halls to share ideas about everything from how to increase their food security through increased local agriculture to building more efficient affordable housing.[57]

Nor is it all dry planning meetings. In Totnes, the local Transition group organizes frequent movie nights, public lectures, and discussions, as well as street festivals to celebrate each landmark toward greater sustainability. This too is part of responding to the climate crisis, as critical as having secure food supplies and building sturdy seawalls. Because a key determinant in how any community survives an extreme weather event is its connective tissue—the presence of small local businesses and common spaces where neighbors can get to know one another and make sure that elderly people aren't forgotten during crushing heat waves or storms. As the environmental writer and analyst David Roberts has observed, "the ingredients of resilience" are "overlapping social and civic circles, filled with

people who, by virtue of living in close proximity and sharing common spaces, know and take care of each other. The greatest danger in times of stress or threat is*isolation*. Finding ways of expanding public spaces and nurturing civic involvement is not just some woolly-headed liberal project—it's a survival strategy."[58]

The intimacy of local politics is also what has turned this tier of government into an important site of resistance to the carbon extraction frenzy—whether it's cities voting to take back control over a coal-burning utility that won't switch to renewables (as so many citizens are doing in Germany), or municipalities adopting policies to divest city holdings of fossil fuels, or towns passing anti-fracking ordinances. And these are not mere symbolic expressions of dissent. Commenting on the stakes of his client's court challenge to local anti-fracking ordinances, Thomas West, a lawyer for Norse Energy Corporation USA, told *The New York Times*, "It's going to decide the future of the oil and gas industry in the state of New York."[59]

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Local ordinances are not the only—or even the most powerful—unconventional legal tools that may help Blockadia to extend its early victories. This became apparent when the panel reviewing Enbridge's Northern Gateway pipeline announced its recommendations. The news that it had greenlighted the federal government to approve the much loathed tar sands project was not, for the most part, greeted with despair. Instead, a great many Canadians remained convinced that the pipeline would never go ahead and that the British Columbia coast would be saved—no matter what the panel said or what the federal government did.

"The federal cabinet needs First Nations' approval and social license from British Columbians, and they have neither," said Sierra Club BC campaigns director Caitlyn Vernon. And referring to the Save the Fraser Declaration signed by Chief Baptiste and so many others, she added, "First Nations have formally banned pipelines and tankers from their territories on the basis of Indigenous law."[60] It was a sentiment echoed repeatedly in news reports: that the legal title of the province's First Nations was so powerful that even if the federal government did approve the pipeline (which it eventually did in June 2014), the project would be successfully stopped in the courts through Indigenous legal challenges, as well as in the forests through direct action.

Is it true? As the next chapter will explore, the historical claims being made by Indigenous peoples around the world as well as by developing countries for an

honoring of historical debts indeed have the potential to act as counterweights to increasingly undemocratic and intransigent governments. But the outcome of this power struggle is by no means certain. As always, it depends on what kind of movement rallies behind these human rights and moral claims.

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[*] When a make-up hearing was scheduled by the Joint Review Panel months later, it was held in a predominantly white community elsewhere in the province.

[*] Sadly, this pristine UNESCO Biosphere Reserve is once again at risk after an international court ruling declared the waters surrounding the Caribbean islands to be legally owned by the government of Nicaragua (though the islands themselves remain part of Colombia). And Nicaragua has stated its intention to drill.

[*] For instance, in May 2013, sixty-eight groups and individuals—including Friends of the Earth, Greenpeace, and Robert Kennedy Jr.—signed a letter that directly criticized the EDF and and its president Fred Krupp for their role in creating the industry-partnered Center for Sustainable Shale Development (CSSD). "CSSD bills itself as a collaborative effort between 'diverse interests with a common goal,' but our goals as a nation are not, and cannot, be the same as those of Chevron, Consol Energy, EQT Corporation, and Shell, all partners in CSSD," the letter states. "These corporations are interested in extracting as much shale gas and oil as possible, and at a low cost. We are interested in minimizing the extraction and consumption of fossil fuels and in facilitating a rapid transition to the real sustainable energy sources—the sun, the wind, and hydropower."

[†] Reached by email, Carl Pope, who had not previously commented on the controversy, explained his actions as follows: "Climate advocates were at war with the coal industry, and at that moment Chesapeake was willing to ally with us. I understand the concerns of those who thought that alliance was a bad idea—but it is likely that without it about 75 of the pending 150 new coal fired power plants we stopped would have been built instead." He added, "What I do regret is the failure at the time to understand the scale and form that the shale gas and oil revolution would take, which led us to make inadequate investments in getting ready for the assault that would soon be coming at states like Pennsylvania, West Virginia and Colorado. That was a significant, and costly, failure of vision."

[*] This reached truly absurd levels in December 2013 when two twentysomething antifracking activists were charged with staging a "terrorism hoax" after they unfurled cloth protest banners at the headquarters of Devon Energy in Oklahoma City. Playing on the *Hunger Games* slogan, one of the banners said: "THE ODDS ARE NEVER IN OUR FAVOR." Standard, even benign activist fare—except for one detail. According to Oklahoma City Police captain Dexter Nelson, as the banner was lowered it shed a "black powder substance" that was meant to mimic a "biochemical assault," as the police report put it. That nefarious powder, the captain stated, was "later determined to be glitter." Never mind that the video of the event showed absolutely no concern about the falling glitter from the assembled onlookers. "I could have swept it up in two minutes if they gave me a broom," said Stefan Warner, one of those charged and facing the prospect of up to ten years in jail.

11

YOU AND WHAT ARMY?

Indigenous Rights and the Power of Keeping Our Word

"I never thought I would ever see the day that we would come together. Relationships are changing, stereotypes are disappearing, there's more respect for one another. If anything, this Enbridge Northern Gateway has unified British Columbia."

—Geraldine Thomas-Flurer, coordinator of the Yinka Dene Alliance, a First Nations coalition opposing the Enbridge Northern Gateway pipeline, 2013[1]

"There is never peace in West Virginia because there is never justice."

—Labor organizer Mary Harris "Mother" Jones, 1925[2]

The guy from Standard & Poor's was leafing through the fat binder on the round table in the meeting room, brow furrowed, skimming and nodding.

It was 2004 and I found myself sitting in on a private meeting between two important First Nations leaders and a representative of one of the three most powerful credit rating agencies in the world. The meeting had been requested by Arthur Manuel, a former Neskonlith chief in the interior of British Columbia, now spokesperson for the Indigenous Network on Economies and Trade.

Arthur Manuel, who comes from a long line of respected Native leaders, is an internationally recognized thinker on the question of how to force belligerent governments to respect Indigenous land rights, though you might not guess it from his plainspoken manner or his tendency to chuckle mid-sentence. His theory is that nothing will change until there is a crediblethreat that continuing to violate Native rights will carry serious financial costs, whether for governments or investors. So he has been looking for different ways to inflict those costs.

That's why he had initiated a correspondence with Standard & Poor's, which routinely blesses Canada with a AAA credit rating, a much coveted indicator to investors that the country is a safe and secure place in which to sink their money. In letters to the agency, Manuel had argued that Canada did not deserve such a high rating because it was failing to report a very important liability: a massive unpaid debt that takes the form of all the wealth that had been extracted from unceded Indigenous land, without consent—since 1846.[3] He further explained the various Supreme Court cases that had affirmed that Aboriginal and Treaty Rights were still very much alive.

After much back-and-forth, Manuel had managed to get a meeting with Joydeep Mukherji, director of the Sovereign Ratings Group, and the man responsible for issuing Canada's credit rating. The meeting took place at S&P's headquarters, a towering building just off Wall Street. Manuel had invited Guujaaw, the charismatic president of the Haida Nation, to help him make the case about those unpaid debts, and at the last minute had asked me to come along as a witness. Unaware that, post-9/11, official ID is required to get into all major Manhattan office buildings, the Haida leader had left his passport in his hotel room; dressed in a short-sleeved checked shirt and with a long braid down his back, Guujaaw almost didn't make it past security. But after some negotiation with security (and intervention from Manuel's contact upstairs), we made it in.

At the meeting, Manuel presented the Okanagan writ of summons, and explained that similar writs had been filed by many other First Nations. These simple documents, asserting land title to large swaths of territory, put the Canadian government on notice that these bands had every intention of taking legal action to get the economic benefits of lands being used by resource companies without their consent. These writs, Manuel explained, represented trillions of dollars' worth of unacknowledged liability being carried by the Canadian state.

Guujaaw then solemnly presented Mukherji with the Haida Nation's registered statement of claim, a seven-page legal document that had been filed before the Supreme Court of British Columbia seeking damages and reparations from the provincial government for unlawfully exploiting and degrading lands and waters that are rightfully controlled by the Haida. Indeed, at that moment, the case was being argued before the Supreme Court of Canada, challenging both the logging giant Weyerhaeuser and the provincial government of British Columbia over a failure to consult before logging the forests on the Pacific island of Haida Gwaii. "Right now the Canadian and British Columbia governments are using our land and our resources—Aboriginal and Treaty Rights—as collateral for all the loans

they get from Wall Street," Manuel said. "We are in fact subsidizing the wealth of Canada and British Columbia with our impoverishment."[4]

Mukherji and an S&P colleague listened and silently skimmed Manuel's documents. A polite question was asked about Canada's recent federal elections and whether the new government was expected to change the enforcement of Indigenous land rights. It was clear that none of this was new to them—not the claims, not the court rulings, not the constitutional language. They did not dispute any of the facts. But Mukherji explained as nicely as he possibly could that the agency had come to the conclusion that Canada's First Nations did not have the power to enforce their rights and therefore to collect on their enormous debts. Which meant, from S&P's perspective, that those debts shouldn't affect Canada's stellar credit rating. The company would, however, continue to monitor the situation to see if the dynamics changed.

And with that we were back on the street, surrounded by New Yorkers clutching iced lattes and barking into cell phones. Manuel snapped a few pictures of Guujaaw underneath the Standard & Poor's sign, flanked by security guards in body armor. The two men seemed undaunted by what had transpired; I, on the other hand, was reeling. Because what the men from S&P were really saying to these two representatives of my country's original inhabitants was: "We know you never sold your land. But how are you going to make the Canadian government keep its word? You and what army?"

At the time, there did not seem to be a good answer to that question. Indigenous rights in North America did not have powerful forces marshaled behind them and they had plenty of powerful forces standing in opposition. Not just government, industry, and police, but also corporate-owned media that cast them as living in the past and enjoying undeserved special rights, while those same media outlets usually failed to do basic public education about the nature of the treaties our governments (or rather their British predecessors) had signed. Even most intelligent, progressive thinkers paid little heed: sure they supported Indigenous rights in theory, but usually as part of the broader multicultural mosaic, not as something they needed to actively defend.

However, in perhaps the most politically significant development of the rise of Blockadia-style resistance, this dynamic is changing rapidly—and an army of sorts is beginning to coalesce around the fight to turn Indigenous land rights into hard economic realities that neither government nor industry can ignore.

The Last Line of Defense

As we have seen, the exercise of Indigenous rights has played a central role in the rise of the current wave of fossil fuel resistance. The Nez Perce were the ones who were ultimately able to stop the big rigs on Highway 12 in Idaho and Montana; the Northern Cheyenne continue to be the biggest barrier to coal development in southeastern Montana; the Lummi present the greatest legal obstacle to the construction of the biggest proposed coal export terminal in the Pacific Northwest; the Elsipogtog First Nation managed to substantially interfere with seismic testing for fracking in New Brunswick; and so on. Going back further, it's worth remembering that the struggles of the Ogoni and Ijaw in Nigeria included a broad demand for self-determination and resource control over land that both groups claimed was illegitimately taken from them during the colonial formation of Nigeria. In short, Indigenous land and treaty rights have proved a major barrier for the extractive industries in many of the key Blockadia struggles.

And through these victories, a great many non-Natives are beginning to understand that these rights represent some of the most robust tools available to prevent ecological crisis. Even more critically, many non-Natives are also beginning to see that the ways of life that Indigenous groups are protecting have a great deal to teach about how to relate to the land in ways that are not purely extractive. This represents a true sea change overa very short period of time. My own country offers a glimpse into the speed of this shift.

The Canadian Constitution and the Canadian Charter of Rights and Freedoms acknowledge and offer protection to "aboriginal rights," including treaty rights, the right to self-government, and the right to practice traditional culture and customs. There was, however, a widespread perception among Canadians that treaties represented agreements to fully surrender large portions of lands in exchange for the provision of public services and designated rights on much smaller reserves. Many Canadians also assumed that in the lands not covered by any treaty (which is a great deal of the country, 80 percent of British Columbia alone), non-Natives could pretty much do what they wished with the natural resources. First Nations had rights on their reserves, but if they once had rights off them as well, they had surely lost them by attrition over the years. Finders keepers sort of thing, or so the thinking went.[5]

All of this was turned upside down in the late 1990s when the Supreme Court of Canada handed down a series of landmark decisions in cases designed to test the limits of Aboriginal title and treaty rights. First came *Delgamuukw v. British Columbia* in 1997, which ruled that in those large parts of B.C. that were not

covered by any treaty, Aboriginal title over that land had never been extinguished and still needed to be settled. This was interpreted by many First Nations as an assertion that they still had full rights to that land, including the right to fish, hunt, and gather there. Chelsea Vowel, a Montréal-based Métis educator and Indigenous legal scholar, explains the shockwave caused by the decision. "One day, Canadians woke up to a legal reality in which millions of acres of land were recognized as never having been acquired by the Crown," which would have "immediate implications for other areas of the country where no treaties ceding land ownership were ever signed."[6]

Two years later, in 1999, the ruling known as the *Marshall* decision affirmed that when the Mi'kmaq, Maliseet, and Passamaquoddy First Nations, largely based in New Brunswick and Nova Scotia, signed "peace and friendship" treaties with the British Crown in 1760 and 1761, they did not—as so many Canadians then assumed—agree to give up rights to their ancestral lands. Rather they were agreeing to *share* them with settlers on the condition that the First Nations could continue to use those lands for traditional activities like fishing, trading, and ceremony. The case was sparked by a single fisherman, Donald Marshall Jr., catching eels out of season and without a license; the court ruled that it was within the rights of the Mi'kmaq and Maliseet to fish year-round enough to earn a "moderate livelihood" where their ancestors had fished, exempting them from many of the rules set by the federal government for the non-Native fishing fleet.[7]

Many other North American treaties contained similar resource-sharing provisions. Treaty 6, for instance, which covers large parts of the Alberta tar sands region, contains clear language stating that "Indians, shall have right to pursue their avocations of hunting and fishing throughout the tract surrendered"—in other words, they surrendered only their *exclusive* rights to the territory and agreed that the land would be used by both parties, with settlers and Indigenous peoples pursuing their interests in parallel.[8]

But any parallel, peaceful coexistence is plainly impossible if one party is irrevocably altering and poisoning that shared land. And indeed, though it is not written in the text of the treaty, First Nations elders living in this region contend that Indigenous negotiators gave permission for the land to be used by settlers only "to the depth of a plow"—considerably less than the cavernous holes being dug there today. In the agreements that created modern-day North America such land-sharing provisions form the basis of most major treaties.

In Canada, the period after the Supreme Court decisions was a tumultuous one. Federal and provincial governments did little or nothing to protect the rights that

the judges had affirmed, so it fell to Indigenous people to go out on the land and water and assert them—to fish, hunt, log, and build ceremonial structures, often without state permission. The backlash was swift. Across the country non-Native fishers and hunters complained that the "Indians" were above the law, that they were going to empty the oceans and rivers of fish, take all the good game, destroy the woods, and on and on. (Never mind the uninterrupted record of reckless resource mismanagement by all levels of the Canadian government.)

Tensions came to a head in the Mi'kmaq community of Burnt Church, New Brunswick. Enraged that the *Marshall* decision had empowered Mi'kmaq people to exercise their treaty rights and fish outside of government-approved seasons, mobs of non-Native fishermen launched a series of violent attacks on their Native neighbors. In what became known as the Burnt Church Crisis, thousands of Mi'kmaq lobster traps were destroyed, three fish-processing plants were ransacked, a ceremonial arbor was burned to the ground, and several Indigenous people were hospitalized after their truck was attacked. And it wasn't just vigilante violence. As the months-long crisis wore on, government boats staffed with officials in riot gear rammed into Native fishing boats, sinking two vessels and forcing their crews to jump to safety in the water. The Mi'kmaq fishers did their best to defend themselves, with the help of the Mi'kmaq Warrior Society, but they were vastly outnumbered and an atmosphere of fear prevailed for years. The racism was so severe that at one point a non-Native fisherman put on a long-haired wig and performed a cartoonish "war dance" on the deck of his boat in front of delighted television crews.

That was 2000. In 2013, a little more than an hour's drive down the coast from Burnt Church, the same Mi'kmaq Warrior Society was once again in the news, this time because it had joined with the Elsipogtog First Nation to fend off the Texas company at the center of the province's fracking showdown. But the mood and underlying dynamics could not have been more different. This time, over months of protest, the warriors helped to light a series of ceremonial sacred fires and explicitly invited the non-Native community to join them on the barricades "to ensure that the company cannot resume work to extract shale gas via fracking." A statement explained, "This comes as part of a larger campaign that reunites Indigenous, Acadian & Anglo people." (New Brunswick has a large French-speaking Acadian population, with its own historical tensions with the English-speaking majority.)[9]

Many heeded the call and it was frequently noted that protests led by the Elsipogtog First Nation were remarkably diverse, drawing participants from all of

the province's ethnic groups, as well as from First Nations across the country. As one non-Native participant, Debbi Hauper, told a video crew, "It's just a real sense of togetherness. We are united in what is most important. And I think we're seeing more and more of government and industries' methods of trying to separate us. And let's face it, these methods have worked for decades. But I think we're waking up."[10]

There were attempts to revive the old hatreds, to be sure. A police officer was overheard saying "Crown land belongs to the government, not to fucking Natives." And after the conflict with police turned violent, New Brunswick premier David Alward observed, "Clearly, there are those who do not have the same values we share as New Brunswickers." But the community stuck together and there were solidarity protests in dozens of cities and towns across the country: "This is not just a First Nations campaign. It's actually quite a historic moment where all the major peoples of this province—English, French and Aboriginal—come together for a common cause," said David Coon, head of the Green Party in New Brunswick. "This is really a question of justice. They want to protect their common lands, water and air from destruction."[11]

By then many in the province had come to understand that the Mi'kmaq's rights to use their traditional lands and waters to hunt and fish—the same rights that had sparked race riots a dozen years earlier—represented the best hope for the majority of New Brunswickers who opposed fracking.[12] And new tools were clearly required. Premier Alward had been a fracking skeptic before he was elected in 2010 but once in office, he promptly changed his tune, saying the revenue was needed to pay for social programs and to create jobs—the sort of flip flop that breeds cynicism about representative democracy the world over.

Indigenous rights, in contrast, are not dependent on the whims of politicians. The position of the Elsipogtog First Nation was that no treaty gave the Canadian government the authority to radically alter their ancestral lands. The right to hunt and fish, affirmed by the *Marshall* decision, was violated by industrial activity that threatened the fundamental health of the lands and waters (since what good is having the right to fish, for instance, when the water is polluted?). Gary Simon of the Elsipogtog First Nation explains, "I believe our treaties are the last line of defense to save the clean water for future generations."[13]

It's the same position the Lummi have taken against the coal export terminal near Bellingham, Washington, arguing that the vast increase in tanker traffic in the Strait of Georgia, as well as the polluting impacts of coal dust, violates their treaty-protected right to fish those waters. (The Lower Elwha Klallam tribe in

Washington State made similar points when its leaders fought to remove two dams on the Elwha River. They argued, successfully, that by interfering with salmon runs the dam violated their treaty rights to fish.) And when the U.S. State Department indicated, in February 2014, that it might soon be offering its blessing to the Keystone XL pipeline, members of the Lakota Nation immediately announced that they considered the pipeline construction illegal. As Paula Antoine, an employee of the Rosebud tribe's land office, explained, because the pipeline passes through Lakota treaty-protected traditional territory, and very close to reservation land, "They aren't recognizing our treaties, they are violating our treaty rights and our boundaries by going through there. Any ground disturbance around that proposed line will affect us."[14]

These rights are real and they are powerful, all the more so because many of the planet's largest and most dangerous unexploded carbon bombs lie beneath lands and waters to which Indigenous peoples have legitimate legal claims. No one has more legal power to halt the reckless expansion of the tar sands than the First Nations living downstream whose treaty-protected hunting, fishing, and trapping grounds have already been fouled, just as no one has more legal power to halt the rush to drill under the Arctic's melting ice than Inuit, Sami, and other northern Indigenous tribes whose livelihoods would be jeopardized by an offshore oil spill. Whether they are able to exercise those rights is another matter.

This power was on display in January 2014 when a coalition of Alaskan Native tribes, who had joined forces with several large green groups, won a major court victory against Shell's already scandal-plagued Arctic drilling adventures. Led by the Native village of Point Hope, the coalition argued that when the U.S. Interior Department handed out drilling permits to Shell and others in the Chukchi Sea, it failed to take into account the full risks, including the risks to Indigenous Inupiat ways of life, which are inextricably entwined with a healthy ocean. As Port Hope mayor Steve Oomittuk explained when the lawsuit was launched, his people "have hunted and depended on the animals that migrate through the Chukchi Sea for thousands of years. This is our garden, our identity, our livelihood. Without it we would not be who we are today.… We oppose any activity that will endanger our way of life and the animals that we greatly depend on." Faith Gemmill, executive director of Resisting Environmental Destruction on Indigenous Lands, one of the groups behind the lawsuit, notes that for the Inupiat who rely on the Chukchi Sea, "you cannot separate environmental impacts from subsistence impacts, for they are the same."[15]

A federal appeals court ruled in the coalition's favor, finding that the Department of the Interior's risk assessments were based on estimates that were "arbitrary and capricious," or presented "only the *best* case scenario for environmental harm."[16] Rather like the shoddy risk assessments that set the stage for BP's Deepwater Horizon disaster.

John Sauven, executive director of Greenpeace U.K., described the ruling as "a massive blow to Shell's Arctic ambitions." Indeed just days later, the company announced that it was putting its Arctic plans on indefinite hold. "This is a disappointing outcome, but the lack of a clear path forward means that I am not prepared to commit further resources for drilling in Alaska in 2014," said Shell CEO Ben van Beurden. "We will look to relevant agencies and the Court to resolve their open legal issues as quickly as possible." Without Indigenous groups raising the human rights stakes in this battle, it's a victory that might never have taken place.[17]

Worldwide, companies pushing for vast new coal mines and coal export terminals are increasingly being forced to similarly reckon with the unique legal powers held by Indigenous peoples. For instance, in Western Australia in 2013 the prospect of legal battles over native title was an important factor in derailing a planned $45 billion LNG (liquefied natural gas) processing plant and port, and though the state government remains determined to force gas infrastructure and fracking on the area, Indigenous groups are threatening to assert their traditional ownership and procedural rights in court. The same is true of communities facing coal bed methane development in New South Wales.[18]

Meanwhile, several Indigenous groups in the Amazon have been steadfastly holding back the oil interests determined to sacrifice new swaths of the great forests, protecting both the carbon beneath the ground and the carbon-capturing trees and soil above those oil and gas deposits. They have asserted their land rights with increasing success at the Inter-American Court of Human Rights, which has sided with Indigenous groups against governments in cases involving natural resource and territorial rights.[19] And the U'wa, an isolated tribe in Colombia's Andean cloud forests—where the tree canopy is perpetually shrouded in mist—have made history by resisting repeated attempts by oil giants to drill in their territory, insisting that stealing the oil beneath the earth would bring about the tribe's destruction. (Though some limited drilling has taken place.)

As the Indigenous rights movement gains strength globally, huge advances are being made in recognizing the legitimacy of these claims. Most significant was the United Nations Declaration on the Rights of Indigenous Peoples, adopted by the

General Assembly in September 2007 after 143 member states voted in its favor (the four opposing votes—United States, Canada, Australia, and New Zealand—would each, under domestic pressure, eventually endorse it as well). The declaration states that, "Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources." And further that they have "the right to redress" for the lands that "have been confiscated, taken, occupied, used or damaged without their free, prior and informed consent." Some countries have even taken the step of recognizing these rights in revised constitutions. Bolivia's constitution, approved by voters in 2009, states that Indigenous peoples "are guaranteed the right to prior consent: obligatory consultation by the government, acting in good faith and in agreement, prior to the exploitation of non-renewable natural resources in the territory they inhabit." A huge, hard-won legal victory.[20]

Might vs. Rights

And yet despite growing recognition of these rights, there remains a tremendous gap between what governments say (and sign) and what they do—and there is no guarantee of winning when these rights are tested in court. Even in countries with enlightened laws as in Bolivia and Ecuador, the state still pushes ahead with extractive projects without the consent of the Indigenous people who rely on those lands.[21] And in Canada, the United States, and Australia, these rights are not only ignored, but Indigenous people know that if they try to physically stop extractive projects that are clearly illegal, they will in all likelihood find themselves on the wrong side of a can of pepper spray—or the barrel of a gun. And while the lawyers argue the intricacies of land title in court, buzzing chainsaws proceed to topple trees that are four times as old as our countries, and toxic fracking fluids seep into the groundwater.

The reason industry can get away with this has little to do with what is legal and everything to do with raw political power: isolated, often impoverished Indigenous peoples generally lack the monetary resources and social clout to enforce their rights, and anyway, the police are controlled by the state. Moreover the costs of taking on multinational extractive companies in court are enormous. For instance in the landmark "Rainforest Chernobyl" case in which Ecuador's highest court ordered Chevron to pay $9.5 billion in damages, a company spokesman famously

said: "We're going to fight this until hell freezes over—and then we'll fight it out on the ice." (And indeed, the fight still drags on.)[22]

I was struck by this profound imbalance when I traveled to the territory of the Beaver Lake Cree Nation in northern Alberta, a community that is in the midst of one of the highest-stakes legal battles in the tar sands. In 2008, the band filed a historic lawsuit charging that by allowing its traditional territories to be turned into a latticework of oil and gas infrastructure, and by poisoning and driving away the local wildlife, the provincial and federal governments, as well as the British Crown, had infringed no fewer than fifteen thousand times on the First Nation's treaty rights to continue to hunt, fish, and trap on their territory.[23] What set the case apart was that it was not about one particular infringement, but an entire model of poisonous, extractive development, essentially arguing that this model itself constituted a grave treaty violation.

"The Governments of Canada and Alberta have made a lot of promises to our people and we intend to see those promises kept," said Al Lameman, the formidable chief of the Beaver Lake Cree Nation at the time the lawsuit was filed (Lameman had made history before, filing some of the first Indigenous human rights challenges against the Canadian government). Against the odds, the case has proceeded through the Canadian court system, and in March 2012 an Alberta court flatly rejected government efforts to have the case dismissed as "frivolous," an "abuse of the Court's process," and "unmanageable."[24]

A year after that ruling, I met Al Lameman, now retired, and his cousin Germaine Anderson, an elected band councilor, as well as the former chief's niece, Crystal Lameman, who has emerged as one of the most compelling voices against the tar sands on the international stage. These are three of the people most responsible for moving the lawsuit forward, and Germaine Anderson had invited me to a family barbecue to discuss the case.

It was early July and after a long dark winter it was as if a veil had lifted: the sun was still bright at 10 p.m. and the northern air had a thin, baked quality. Al Lameman had aged considerably in recent years and slipped in and out of the conversation. Anderson, almost painfully shy, had also struggled with her health. The spot where the family met for this gathering was where she spent the summer months: a small trailer in a clearing in the woods, without running water or electricity, entirely off the grid. I knew the Beaver Lake Cree were in a David and Goliath struggle. But on that endless summer evening, I suddenly understood what this actually meant: some of the most marginalized people in my country—many of them, like all the senior members of the Lameman clan, survivors of the

intergenerational trauma of abusive residential schools—are taking on some of the wealthiest and most powerful forces on the planet. Their heroic battles are not just their people's best chance of a healthy future; if court challenges like Beaver Lake's can succeed in halting tar sands expansion, they could very well be the best chance for the rest of us to continue enjoying a climate that is hospitable to human life. That is a huge burden to bear and that these communities are bearing it with shockingly little support from the rest of us is an unspeakable social injustice. A few hours north, a different Indigenous community, the Athabasca Chipewyan First Nation (ACFN), recently launched another landmark lawsuit, this one taking on Shell and the Canadian government over the approval of a huge tar sands mine expansion. The band is also challenging another Shell project, the proposed Pierre River Mine, which it says "would significantly impact lands, water, wildlife and the First Nation's ability to utilize their traditional territory." Once again the mismatch is staggering. The ACFN, with just over one thousand members and an operating budget of about $5 million, is battling both the Canadian government and Shell, with its 92,000 employees across more than seventy countries and 2013 global revenues of $451.2 billion. Many communities see odds like these and, understandably, never even get in the ring.[25]

It is this gap between rights and resources—between what the law says and what impoverished people are able to force vastly more powerful entities to do—that government and industry have banked on for years.

"Honour the Treaties"

What is changing is that many non-Native people are starting to realize that Indigenous rights—if aggressively backed by court challenges, direct action, and mass movements demanding that they be respected—may now represent the most powerful barriers protecting all of us from a future of climate chaos. Which is why, in many cases, the movements against extreme energy extraction are becoming more than just battles against specific oil, gas, and coal companies and more, even, than pro-democracy movements. They are opening up spaces for a historical reconciliation between Indigenous peoples and non-Natives, who are finally understanding that, at a time when elected officials have open disdain for basic democratic principles, Indigenous rights are not a threat, but a tremendous gift. Because the original Indigenous treaty negotiators in much of North America had the foresight to include language protecting their right to continue living off their

traditional lands, they bequeathed to all residents of these and many other countries the legal tools to demand that our governments refrain from finishing the job of flaying the planet. And so, in communities where there was once only anger, jealousy, and thinly veiled racism, there is now something new and unfamiliar. "We're really thankful for our First Nations partners in this struggle," said Lionel Conant, a property manager whose home in Fort St. James, British Columbia, is within sight of the proposed Northern Gateway pipeline. "[They've] got the legal weight to deal with [the pipeline] … because this is all unceded land." In Washington State, anti-coal activists talk about the treaty rights of the Lummi as their "ace in the hole" should all other methods of blocking the export terminals fail. In Montana, the Sierra Club's Mike Scott told me bluntly, "I don't think people understand the political power Natives have as sovereign nations, often because they lack the resources to exercise that power. They can stop energy projects in a way we can't."[26]

In New Brunswick, Suzanne Patles, a Mi'kmaq woman involved in the anti-fracking movement, described how non-Natives "have reached out to the Indigenous people to say 'we need help.' "[27] Which is something of a turnaround from the saviorism and pitying charity that have poisoned relationships between Indigenous peoples and well-meaning liberals for far too long. It was in the context of this gradual shift in awareness that Idle No More burst onto the political scene in Canada at the end of 2012 and then spread quickly south of the border. North American shopping centers—from the enormous West Edmonton Mall to Minnesota's Mall of America—were suddenly alive with the sounds of hand drums and jingle dresses as Indigenous people held flash mob round dances across the continent at the peak of the Christmas shopping season. In Canada, Native leaders went on hunger strikes, and youths embarked on months-long spiritual walks and blockaded roads and railways.

The movement was originally sparked by a series of attacks by the Canadian government on Indigenous sovereignty, as well as its all-out assault on existing environmental protections, particularly for water, to pave the way for rapid tar sands expansion, more mega-mines, and projects like Enbridge's Northern Gateway pipeline. The attacks came in the form of two omnibus budget bills passed in 2012 that gutted large parts of the country's environmental regulatory framework. As a result, a great many industrial activities were suddenly exempt from federal environmental reviews, which along with other changes, greatly reduced opportunities for community input and gave the intractable right-wing government of Stephen Harper a virtual free hand to ram through unpopular energy

and development projects. The omnibus bills also overhauled key provisions of the Navigable Waters Protection Act that protect species and ecosystems from damage. Previously, virtually 100 percent of the country's water bodies had been covered by these protections; under the new order, that was slashed to less than 1 percent, with pipelines simply exempted. (Documents later revealed that the latter change had been specifically requested by the pipeline industry.)[28]

Canadians were in shock at the extent and speed of the regulatory overhaul. Most felt powerless, and with good reason: despite winning only 39.6 percent of the popular vote, the Harper government had a majority in Parliament and could apparently do as it pleased.[29] But the First Nations' response was not to despair; it was to launch the Idle No More movement from coast to coast. These laws, movement leaders said, were an attack on Indigenous rights to clean water and to maintain traditional ways of life. Suddenly, the arguments that had been made in local battles were being taken to the national level, now used against sweeping federal laws. And for a time Idle No More seemed to change the game, attracting support from across Canadian society, from trade unions to university students, to the opinion pages of mainstream newspapers.

These coalitions of rights-rich-but-cash-poor people teaming up with (relatively) cash-rich-but-rights-poor people carry tremendous political potential. If enough people demand that governments honor the legal commitments made to the people on whose land colonial nations were founded, and do so with sufficient force, politicians interested in reelection won't be able to ignore them forever. And the courts, too—however much they may claim to be above such influences—are inevitably shaped by the values of the societies in which they function. A handful of courageous rulings notwithstanding, if an obscure land right or treaty appears to be systematically ignored by the culture as a whole, it will generally be treated tentatively by the courts. If, however, the broader society takes those commitments seriously, then there is a far greater chance that the courts will follow.[*]

As Idle No More gained steam, many investors took notice. "For the first time in six years, Canadian provinces failed to top the list of the best mining jurisdictions in the world in a 2012/13 survey," Reuters reported in March 2013. "Companies that participated in the survey said they were concerned about land claims." The article quoted Ewan Downie, chief executive of Premier Gold Mines, which owns several projects in Ontario: "I would say one of the big things that is weighing on mining investment in Canada right now is First Nations issues."[30]

Writing in *The Guardian*, journalist and activist Martin Lukacs observed that Canadians seemed finally to be grasping that

> implementing Indigenous rights on the ground, starting with the United Nations Declaration on the Rights of Indigenous Peoples, could tilt the balance of stewardship over a vast geography: giving Indigenous peoples much more control, and corporations much less. Which means that finally honoring Indigenous rights is not simply about paying off Canada's enormous legal debt to First Nations: it is also our best chance to save entire territories from endless extraction and destruction. In no small way, the actions of Indigenous peoples—and the decision of Canadians to stand alongside them—will determine the fate of the planet. This new understanding is dawning on more Canadians. Thousands are signing onto educational campaigns to become allies to First Nations.… Sustained action that puts real clout behind Indigenous claims is what will force a reckoning with the true nature of Canada's economy—and the possibility of a transformed country. That is the promise of a growing mass protest movement, an army of untold power and numbers.[31]

In short, the muscle able to turn rights into might that Standard & Poor's had been looking for in that meeting with Arthur Manuel and Guujaaw back in 2004 may have finally developed. The power of this collaboration received another boost in January 2014 when the rock legend Neil Young kicked off a cross-Canada tour called "Honour the Treaties." He had visited the tar sands several months earlier and been devastated by what he saw, saying (to much controversy) that the region "looks like Hiroshima." While in the region, he had met with Chief Allan Adam of the Athabasca Chipewyan and heard about the lawsuits opposing Shell's tar sands expansions, as well as the health impacts current levels of oil production are already having on the community. "I was sitting with the chief in the teepee, on the reserve. I was hearing the stories. I saw that the cancer rate was up among all the tribes. This is not a myth. This is true," Young said.[32]

And he concluded that the best way he could contribute to the fight against the tar sands was to help the Athabasca Chipewyan First Nation exercise its rights in court. So he went on a concert tour, donating 100 percent of the proceeds to the court challenges. In addition to raising $600,000 for their legal battles within two months, the tour attracted unprecedented national attention to both the local and global impacts of runaway tar sands development. The prime minister's office fought back by attacking one of Canada's most beloved icons, but it was a losing battle. Prominent Canadians spoke up to support the campaign, and polls showed that even in Alberta a majority were taking Young's side in the dispute.[33]

Most importantly, the Honour the Treaties tour sparked a national discussion about the duty to respect First Nation legal rights. "It's up to Canadians all across Canada to make up their own minds about whether their integrity is threatened by a government that won't live up to the treaties that this country is founded on," Young said. And the country heard directly from Chief Allan Adam, who described the treaties his ancestors signed as "not just pieces of paper but a last line of defense against encroaching reckless tar sands development that my people don't want and that we are already suffering from."[34]

The Moral Imperative of Economic Alternatives

Making the most of that last line of defense is a complex challenge involving much more than rock concerts and having cash in hand to pay lawyers. The deeper reason why more First Nations communities aren't taking on companies like Shell has to do with the systematic economic and social disenfranchisement that makes doing business with heavily polluting oil or mining companies seem like the only way to cover basic human needs. Yes, there is a desire to protect the rivers, streams, and oceans for traditional fishing. But in Canada, according to a 2011 government report, the water systems in 25 percent of First Nations communities are so neglected and underfunded that they pose a "high overall risk" to health, while thousands of residents of Native reserves are living without sewage or running water at all. If you are the leader of one such community, getting those basic services taken care of, no matter the cost, is very likely going to supersede all other priorities.[35]

And ironically, in many cases, climate change is further increasing the economic pressure on Indigenous communities to make quick-and-dirty deals with extractive industries. That's because disruptive weather changes, particularly in northern regions, are making it much harder to hunt and fish (for example when the ice is almost never solid, communities in the far north become virtually trapped, unable to harvest food for months on end). All this makes it extremely hard to say no to offers of job training and resource sharing when companies like Shell come to town. Members of these communities know that the drilling will only make it harder to engage in subsistence activities—there are real concerns about the effects of oil development on the migration of whales, walruses, and caribou—and that's without the inevitable spills. But precisely because the ecology is already so disrupted by climate change, there often seems no other option.