

**Klein, N. (2014). *This changes everything: Capitalism vs. the climate*. New York: Simon & Shuster.**

### **Introduction: One Way or Another, Everything Changes**

*"Most projections of climate change presume that future changes—greenhouse gas emissions, temperature increases and effects such as sea level rise—will happen incrementally. A given amount of emission will lead to a given amount of temperature increase that will lead to a given amount of smooth incremental sea level rise. However, the geological record for the climate reflects instances where a relatively small change in one element of climate led to abrupt changes in the system as a whole. In other words, pushing global temperatures past certain thresholds could trigger abrupt, unpredictable and potentially irreversible changes that have massively disruptive and large-scale impacts. At that point, even if we do not add any additional CO<sub>2</sub> to the atmosphere, potentially unstoppable processes are set in motion. We can think of this as sudden climate brake and steering failure where the problem and its consequences are no longer something we can control."*

-Report by the American Association for the Advancement of Science, the world's largest general scientific society, 2014<sup>1</sup>

*"I love that smell of the emissions."*

-Sarah Palin, 2011<sup>2</sup>

A voice came over the intercom: would the passengers of Flight 3935, scheduled to depart Washington, D.C., for Charleston, South Carolina, kindly collect their carry-on luggage and get off the plane.

They went down the stairs and gathered on the hot tarmac. There they saw something unusual: the wheels of the US Airways jet had sunk into the black pavement as if it were wet cement. The wheels were lodged so deep, in fact, that the truck that came to tow the plane away couldn't pry it loose. The airline had hoped that without the added weight of the flight's thirty-five passengers, the aircraft would be light enough to pull. It wasn't. Someone posted a picture: "Why is my flight cancelled? Because DC is so damn hot that our plane sank 4" into the pavement."<sup>3</sup>

Eventually, a larger, more powerful vehicle was brought in to tow the plane and this time it worked; the plane finally took off, three hours behind schedule. A spokesperson for the airline blamed the incident on "very unusual temperatures."<sup>4</sup>

The temperatures in the summer of 2012 were indeed unusually hot. (As they were the year before and the year after.) And it's no mystery why this has been happening: the profligate burning of fossil fuels, the very thing that US Airways was bound and determined to do despite the inconvenience presented by a melting tarmac. This irony—the fact that the burning of fossil fuels is so radically changing our climate that it is getting in the way of our, capacity to burn fossil fuels—did not stop the passengers of Flight 3935 from re-embarking and continuing their journeys. Nor was climate change mentioned in any of the major news coverage of the incident.

I am in no position to judge these passengers. All of us who live high consumer lifestyles, wherever we happen to reside, are, metaphorically, passengers on Flight 3935. Faced with a crisis that threatens our survival as a species, our entire culture is continuing to do the very thing that caused the crisis, only with an extra dose of elbow grease behind it. Like the airline bringing in a truck with a more powerful engine to tow that plane, the global economy is upping the ante from conventional sources of fossil fuels to even dirtier and more dangerous versions—

bitumen from the Alberta tar sands, oil from deepwater drilling, gas from hydraulic fracturing (fracking), coal from detonated mountains, and so on.

Meanwhile, each supercharged natural disaster produces new irony-laden snapshots of a climate increasingly inhospitable to the very industries most responsible for its warming. Like the 2013 historic floods in Calgary that forced the head offices of the oil companies mining the Alberta tar sands to go dark and send their employees home, while a train carrying flammable petroleum products teetered on the edge of a disintegrating rail bridge. Or the drought that hit the Mississippi River one year earlier, pushing water levels so low that barges loaded with oil and coal were unable to move for days, while they waited for the Army Corps of Engineers to dredge a channel (they had to appropriate funds allocated to rebuild from the previous year's historic flooding along the same waterway). Or the coal-fired power plants in other parts of the country that were temporarily shut down because the waterways that they draw on to cool their machinery were either too hot or too dry (or, in some cases, both).

Living with this kind of cognitive dissonance is simply part of being alive in this jarring moment in history, when a crisis we have been studiously ignoring is hitting us in the face—and yet we are doubling down on the stuff that is causing the crisis in the first place.

I denied climate change for longer than I care to admit. I knew it was happening, sure. Not like Donald Trump and the Tea Partiers going on about how the continued existence of winter proves it's all a hoax. But I stayed pretty hazy on the details and only skimmed most of the news stories, especially the really scary ones. I told myself the science was too complicated and that the environmentalists were dealing with it. And I continued to behave as if there was nothing wrong with the shiny card in my wallet attesting to my "elite" frequent flyer status.

A great many of us engage in this kind of climate change denial. We look for a split second and then we look away. Or we look but then turn it into a joke ("more signs of the Apocalypse!"). Which is another way of looking away.

Or we look but tell ourselves comforting stories about how humans are clever and will come up with a technological miracle that will safely suck the carbon out of the skies or magically turn down the heat of the sun. Which, I was to discover while researching this book, is yet another way of looking away.

Or we look but try to be hyper-rational about it ("dollar for dollar it's more efficient to focus on economic development than climate change, since wealth is the best protection from weather extremes")—as if having a few more dollars will make much difference when your city is underwater. Which is a way of looking away if you happen to be a policy wonk.

Or we look but tell ourselves we are too busy to care about something so distant and abstract—even though we saw the water in the subways in New York City, and the people on their rooftops in New Orleans, and know that no one is safe, the most vulnerable least of all. And though perfectly understandable, this too is a way of looking away.

Or we look but tell ourselves that all we can do is focus on ourselves. Meditate and shop at farmers' markets and stop driving—but forget trying to actually change the systems that are making the crisis inevitable because that's too much "bad energy" and it will never work. And at first it may appear as if we are looking, because many of these lifestyle changes are indeed part of the solution, but we still have one eye tightly shut.

Or maybe we do look—really look—but then, inevitably, we seem to forget. Remember and then forget again. Climate change is like that; it's hard to keep it in your head for very long. We engage in this odd form of on-again-off-again ecological amnesia for perfectly rational reasons. We deny because we fear that letting in the full reality of this crisis will change everything. And we are right.<sup>5</sup>

We know that if we continue on our current path of allowing emissions to rise year after year, climate change will change everything about our world. Major cities will very likely drown, ancient cultures will be swallowed by the seas, and there is a very high chance that our children will spend a great deal of their lives fleeing and recovering from vicious storms and extreme

droughts. And we don't have to do anything to bring about this future. All we have to do is nothing. Just continue to do what we are doing now, whether it's counting on a techno-fix or tending to our gardens or telling ourselves we're unfortunately too busy to deal with it.

All we have to do is not react as if this is a full-blown crisis. All we have to do is keep on denying how frightened we actually are. And then, bit by bit, we will have arrived at the place we most fear, the thing from which we have been averting our eyes. No additional effort required.

There are ways of preventing this grim future, or at least making it a lot less dire. But the catch is that these also involve changing everything. For us high consumers, it involves changing how we live, how our economies function, even the stories we tell about our place on earth. The good news is that many of these changes are distinctly un-catastrophic. Many are downright exciting. But I didn't discover this for a long while.

I remember the precise moment when I stopped averting my eyes to the reality of climate change, or at least when I first allowed my eyes to rest there for a good while. It was in Geneva, in April 2009, and I was meeting with Bolivia's ambassador to the World Trade Organization (WTO), who was then a surprisingly young woman named Angelica Navarro Llanos. Bolivia being a poor country with a small international budget, Navarro Llanos had recently taken on the climate portfolio in addition to her trade responsibilities. Over lunch in an empty Chinese restaurant, she explained to me (using chopsticks as props to make a graph of the global emission trajectory) that she saw climate change both as a terrible threat to her people—but also an opportunity.

A threat for the obvious reasons: Bolivia is extraordinarily dependent on glaciers for its drinking and irrigation water and those white-capped mountains that tower over its capital were turning gray and brown at an alarming rate. The opportunity, Navarro Llanos said, was that since countries like hers had done almost nothing to send emissions soaring, they were in a position to declare themselves "climate creditors," owed money and technology support from the large emitters to defray the hefty costs of coping with more climate-related disasters, as well as to help them develop on a green energy path.

She had recently given a speech at a United Nations climate conference in which she laid out the case for these kinds of wealth transfers, and she gave me a copy. "Millions of people," it read, "in small islands, least-developed countries, landlocked countries as well as vulnerable communities in Brazil, India and China, and all around the world—are suffering from the effects of a problem to which they did not contribute. ... If we are to curb emissions in the next decade, we need a massive mobilization larger than any in history. We need a Marshall Plan for the Earth. This plan must mobilize financing and technology transfer on scales never seen before. It must get technology onto the ground in every country to ensure we reduce emissions while raising people's quality of life. We have only a decade."<sup>6</sup>

Of course a Marshall Plan for the Earth would be very costly—hundreds of billions if not trillions of dollars (Navarro Llanos was reluctant to name a figure). And one might have thought that the cost alone would make it a nonstarter—after all, this was 2009 and the global financial crisis was in full swing. Yet the grinding logic of austerity—passing on the bankers' bills to the people in the form of public sector layoffs, school closures, and the like—had not yet been normalized. So rather than making Navarro Llanos's ideas seem less plausible, the crisis had the opposite effect.

We had all just watched as trillions of dollars were marshaled in a moment when our elites decided to declare a crisis. If the banks were allowed to fail, we were told, the rest of the economy would collapse. It was a matter of collective survival, so the money had to be found. In the process, some rather large fictions at the heart of our economic system were exposed (Need more money? Print some!). A few years earlier, governments took a similar approach to public finances after the September 11 terrorist attacks. In many Western countries, when it came to constructing the security/ surveillance state at home and waging war abroad, budgets never seemed to be an issue.

Climate change has never received the crisis treatment from our leaders, despite the fact that it carries the risk of destroying lives on a vastly greater scale than collapsed banks or collapsed buildings. The cuts to our greenhouse gas emissions that scientists tell us are necessary in order to greatly reduce the risk of catastrophe are treated as nothing more than gentle suggestions, actions that can be put off pretty much indefinitely. Clearly, what gets declared a crisis is an expression of power and priorities as much as hard facts. But we need not be spectators in all this: politicians aren't the only ones with the power to declare a crisis. Mass movements of regular people can declare one too.

Slavery wasn't a crisis for British and American elites until abolitionism turned it into one. Racial discrimination wasn't a crisis until the civil rights movement turned it into one. Sex discrimination wasn't a crisis until feminism turned it into one. Apartheid wasn't a crisis until the anti-apartheid movement turned it into one.

In the very same way, if enough of us stop looking away and decide that climate change is a crisis worthy of Marshall Plan levels of response, then it will become one, and the political class will have to respond, both by making resources available and by bending the free market rules that have proven so pliable when elite interests are in peril. We occasionally catch glimpses of this potential when a crisis puts climate change at the front of our minds for a while. "Money is no object in this relief effort. Whatever money is needed for it will be spent," declared British prime minister David Cameron—Mr. Austerity himself—when large parts of his country were underwater from historic flooding in February 2014 and the public was enraged that his government was not doing more to help.<sup>7</sup>

Listening to Navarro Llanos describe Bolivia's perspective, I began to understand how climate change—if treated as a true planetary emergency akin to those rising flood waters—could become a galvanizing force for humanity, leaving us all not just safer from extreme weather, but with societies that are safer and fairer in all kinds of other ways as well. The resources required to rapidly move away from fossil fuels and prepare for the coming heavy weather could pull huge swaths of humanity out of poverty, providing services now sorely lacking, from clean water to electricity. This is a vision of the future that goes beyond just surviving or enduring climate change, beyond "mitigating" and "adapting" to it in the grim language of the United Nations. It is a vision in which we collectively use the crisis to leap somewhere that seems, frankly, better than where we are right now.

After that conversation, I found that I no longer feared immersing myself in the scientific reality of the climate threat. I stopped avoiding the articles and the scientific studies and read everything I could find. I also stopped outsourcing the problem to the environmentalists, stopped telling myself this was somebody else's issue, somebody else's job. And through conversations with others in the growing climate justice movement, I began to see all kinds of ways that climate change could become a catalyzing force for positive change—how it could be the best argument progressives have ever had to demand the rebuilding and reviving of local economies; to reclaim our democracies from corrosive corporate influence; to block harmful new free trade deals and rewrite old ones; to invest in starving public infrastructure like mass transit and affordable housing; to take back ownership of essential services like energy and water; to remake our sick agricultural system into something much healthier; to open borders to migrants whose displacement is linked to climate impacts; to finally respect Indigenous land rights—all of which would help to end grotesque levels of inequality within our nations and between them.

And I started to see signs—new coalitions and fresh arguments—hinting at how, if these various connections were more widely understood, the urgency of the climate crisis could form the basis of a powerful mass movement, one that would weave all these seemingly disparate issues into a coherent narrative about how to protect humanity from the ravages of both a savagely unjust economic system and a destabilized climate system. I have written this book because I came to the conclusion that climate action could provide just such a rare catalyst.

## A People's Shock

But I also wrote it because climate change can be a catalyst for a range of very different and far less desirable forms of social, political, and economic transformation.

I have spent the last fifteen years immersed in research about societies undergoing extreme shocks—caused by economic meltdowns, natural disasters, terrorist attacks, and wars. And I have looked deeply into how societies change in these periods of tremendous stress. How these events change the collective sense of what is possible, for better but mostly for worse. As I discussed in my last book, *The Shock Doctrine*, over the past four decades corporate interests have systematically exploited these various forms of crisis to ram through policies that enrich a small elite—by lifting regulations, cutting social spending, and forcing large-scale privatizations of the public sphere. They have also been the excuse for extreme crackdowns on civil liberties and chilling human rights violations.

And there are plenty of signs that climate change will be no exception—that, rather than sparking solutions that have a real chance of preventing catastrophic warming and protecting us from inevitable disasters, the crisis will once again be seized upon to hand over yet more resources to the 1 percent. You can see the early stages of this process already. Communal forests around the world are being turned into privatized tree farms and preserves so their owners can collect something called "carbon credits," a lucrative scam I'll explore later. There is a booming trade in "weather futures," allowing companies and banks to gamble on changes in the weather as if deadly disasters were a game on a Vegas craps table (between 2005 and 2006 the weather derivatives market jumped nearly fivefold, from \$9.7 billion to \$45.2 billion). Global reinsurance companies are making billions in profits, in part by selling new kinds of protection schemes to developing countries that have done almost nothing to create the climate crisis, but whose infrastructure is intensely vulnerable to its impacts.<sup>8</sup>

And in a moment of candor, the weapons giant Raytheon explained, "Expanded business opportunities are likely to arise as consumer behaviour and needs change in response to climate change." Those opportunities include not just more demand for the company's privatized disaster response services but also "demand for its military products and services as security concerns may arise as results of droughts, floods, and storm events occur as a result of climate change."<sup>9</sup> This is worth remembering whenever doubts creep in about the urgency of this crisis: the private militias are already mobilizing.

Droughts and floods create all kinds of business opportunities besides a growing demand for men with guns. Between 2008 and 2010, at least 261 patents were filed related to growing "climate-ready" crops—seeds supposedly able to withstand extreme weather conditions; of these patents close to 80 percent were controlled by six agribusiness giants, including Monsanto and Syngenta. Superstorm Sandy, meanwhile, has been a windfall for New Jersey real estate developers who have received millions for new construction in lightly damaged areas, while it continues to be a nightmare for those living in hard-hit public housing, much as the aftermath of Hurricane Katrina played out in New Orleans.<sup>10</sup>

None of this is surprising. Finding new ways to privatize the commons and profit from disaster is what our current system is built to do; left to its own devices, it is capable of nothing else. The shock doctrine, however, is not the only way societies respond to crises. We have all witnessed this in recent years as the financial meltdown that began on Wall Street in 2008 reverberated around the world. A sudden rise in food prices helped create the conditions for the Arab Spring. Austerity policies have inspired mass movements from Greece to Spain to Chile to the United States to Quebec. Many of us are getting a lot better at standing up to those who would cynically exploit crises to ransack the public sphere. And yet these protests have also shown that saying no is not enough. If opposition movements are to do more than burn bright and then burn out, they will need a comprehensive vision for what should emerge in the place of our failing system, as well as serious political strategies for how to achieve those goals.

Progressives used to know how to do this. There is a rich populist history of winning big victories for social and economic justice in the midst of large-scale crises. These include, most notably, the policies of the New Deal after the market crash of 1929 and the birth of countless social programs after World War II. These policies were so popular with voters that getting them passed into law did not require the kind of authoritarian trickery that I documented in *The Shock Doctrine*. What was essential was building muscular mass movements capable of standing up to those defending a failing status quo, and that demanded a significantly fairer share of the economic pie for everyone. A few of the lasting (though embattled) legacies of these exceptional historical moments include: public health insurance in many countries, old age pensions, subsidized housing, and public funding for the arts.

I am convinced that climate change represents a historic opportunity on an even greater scale. As part of the project of getting our emissions down to the levels many scientists recommend, we once again have the chance to advance policies that dramatically improve lives, close the gap between rich and poor, create huge numbers of good jobs, and reinvigorate democracy from the ground up. Rather than the ultimate, expression of the shock doctrine—a frenzy of new resource grabs and repression—climate change can be a People's Shock, a blow from below. It can disperse power into the hands of the many rather than consolidating it in the hands of the few, and radically expand the commons, rather than auctioning it off in pieces. And where right-wing shock doctors exploit emergencies (both real and manufactured) in order to push through policies that make us even more crisis prone, the kinds of transformations discussed in these pages would do the exact opposite: they would get to the root of why we are facing serial crises in the first place, and would leave us with both a more habitable climate than the one we are headed for and a far more just economy than the one we have right now.

But before any of these changes can happen—before we can believe that climate change can change us—we first have to stop looking away.

"You have been negotiating all my life." So said Canadian college student Anjali Appadurai, as she stared down the assembled government negotiators at the 2011 United Nations climate conference in Durban, South Africa. She was not exaggerating. The world's governments have been talking about preventing climate change for more than two decades; they began negotiating the year that Anjali, then twenty-one years old, was born. And yet as she pointed out in her memorable speech on the convention floor, delivered on behalf of all of the assembled young people: "In that time, you've failed to meet pledges, you've missed targets, and you've broken promises."<sup>11</sup>

In truth, the intergovernmental body entrusted to prevent "dangerous" levels of climate change has not only failed to make progress over its twenty-odd years of work (and more than ninety official negotiation meetings since the agreement was adopted), it has overseen a process of virtually uninterrupted backsliding. Our governments wasted years fudging numbers and squabbling over start dates, perpetually trying to get extensions like undergrads with late term papers.

The catastrophic result of all this obfuscation and procrastination is now undeniable. Preliminary data shows that in 2013, global carbon dioxide emissions were 61 percent higher than they were in 1990, when negotiations toward a climate treaty began in earnest. As MIT economist John Reilly puts it: "The more we talk about the need to control emissions, the more they are growing." Indeed the only thing rising faster than our emissions is the output of words pledging to lower them. Meanwhile, the annual U.N. climate summit, which remains the best hope for a political breakthrough on climate action, has started to seem less like a forum for serious negotiation than a very costly and high-carbon group therapy session, a place for the representatives of the most vulnerable countries in the world to vent their grief and rage while

low-level representatives of the nations largely responsible for their tragedies stare at their shoes.<sup>12</sup>

This has been the mood ever since the collapse of the much-hyped 2009 U.N. climate summit in Copenhagen. On the last night of that massive gathering, I found myself with a group of climate justice activists, including one of the most prominent campaigners in Britain. Throughout the summit, this young man had been the picture of confidence and composure, briefing dozens of journalists a day on what had gone on during each round of negotiations and what the various emission targets meant in the real world. Despite the challenges, his optimism about the summit's prospects never flagged. Once it was all over, however, and the pitiful deal was done, he fell apart before our eyes. Sitting in an overlit Italian restaurant, he began to sob uncontrollably. "I really thought Obama understood," he kept repeating.

I have come to think of that night as the climate movement's coming of age: it was the moment when the realization truly sank in that no one was coming to save us. The British psychoanalyst and climate specialist Sally Weintrobe describes this as the summit's "fundamental legacy"—the acute and painful realization that our "leaders are not looking after us ... we are not cared for at the level of our very survival."<sup>13</sup> No matter how many times we have been disappointed by the failings of our politicians, this realization still comes as a blow. It really is the case that we are on our own and any credible source of hope in this crisis will have to come from below.

In Copenhagen, the major polluting governments—including the United States and China—signed a nonbinding agreement pledging to keep temperatures from increasing more than 2 degrees Celsius above where they were before we started powering our economies with coal. (That converts to an increase of 3.6 degrees Fahrenheit.) This well-known target, which supposedly represents the "safe" limit of climate change, has always been a highly political choice that has more to do with minimizing economic disruption than with protecting the greatest number of people. When the 2 degrees target was made official in Copenhagen, there were impassioned objections from many delegates who said the goal amounted to a "death sentence" for some low-lying island states, as well as for large parts of Sub-Saharan Africa. In fact it is a very risky target for all of us: so far, temperatures have increased by just .8 degree Celsius and we are already experiencing many alarming impacts, including the unprecedented melting of the Greenland ice sheet in the summer of 2012 and the acidification of oceans far more rapidly than expected. Allowing temperatures to warm by more than twice that amount will unquestionably have perilous consequences.<sup>14</sup>

In a 2012 report, the World Bank laid out the gamble implied by that target. "As global warming approaches and exceeds 2-degrees Celsius, there is a risk of triggering nonlinear tipping elements. Examples include the disintegration of the West Antarctic ice sheet leading to more rapid sea-level rise, or large-scale Amazon dieback drastically affecting ecosystems, rivers, agriculture, energy production, and livelihoods. This would further add to 21st-century global warming and impact entire continents."<sup>15</sup> In other words, once we allow temperatures to climb past a certain point, where the mercury stops is not in our control.

But the bigger problem—and the reason Copenhagen caused such great despair—is that because governments did not agree to binding targets, they are free to pretty much ignore their commitments. Which is precisely what is happening. Indeed, emissions are rising so rapidly that unless something radical changes within our economic structure, 2 degrees now looks like a Utopian dream. And it's not just environmentalists who are raising the alarm. The World Bank also warned when it released its report that "we're on track for a 4°C warmer world [by century's end] marked by extreme heat waves, declining global food stocks, loss of ecosystems and biodiversity, and life-threatening sea level rise." And the report cautioned that, "there is also no certainty that adaptation to a 4°C world is possible." Kevin Anderson, former director (now deputy director) of the Tyndall Centre for Climate Change Research, which has quickly established itself as one of the U.K.'s premier climate research institutions, is even blunter; he

says 4 degrees Celsius warming—7.2 degrees Fahrenheit—is "incompatible with any reasonable characterization of an organized, equitable and civilized global community."<sup>16</sup>

We don't know exactly what a 4 degrees Celsius world would look like, but even the best-case scenario is likely to be calamitous. Four degrees of warming could raise global sea levels by 1 or possibly even 2 meters by 2100 (and would lock in at least a few additional meters over future centuries). This would drown some island nations such as the Maldives and Tuvalu, and inundate many coastal areas from Ecuador and Brazil to the Netherlands to much of California and the northeastern United States, as well as huge swaths of South and Southeast Asia. Major cities likely in jeopardy include Boston, New York, greater Los Angeles, Vancouver, London, Mumbai, Hong Kong, and Shanghai.<sup>17</sup>

Meanwhile, brutal heat waves that can kill tens of thousands of people, even in wealthy countries, would become entirely unremarkable summer events on every continent but Antarctica. The heat would also cause staple crops to suffer dramatic yield losses across the globe (it is possible that Indian wheat and U.S. corn could plummet by as much as 60 percent), this at a time when demand will be surging due to population growth and a growing demand for meat. And since crops will be facing not just heat stress but also extreme events such as wide-ranging droughts, flooding, or pest outbreaks, the losses could easily turn out to be more severe than the models have predicted. When you add ruinous hurricanes, raging wildfires, fisheries collapses, widespread disruptions to water supplies, extinctions, and globetrotting diseases to the mix, it indeed becomes difficult to imagine that a peaceful, ordered society could be sustained (that is, where such a thing exists in the first place).<sup>18</sup>

And keep in mind that these are the optimistic scenarios in which warming is more or less stabilized at 4 degrees Celsius and does not trigger tipping points beyond which runaway warming would occur. Based on the latest modeling, it is becoming safer to assume that 4 degrees could bring about a number of extremely dangerous feedback loops—an Arctic that is regularly ice-free in September, for instance, or, according to one recent study, global vegetation that is too saturated to act as a reliable "sink," leading to more carbon being emitted rather than stored. Once this happens, any hope of predicting impacts pretty much goes out the window. And this process may be starting sooner than anyone predicted. In May 2014, NASA and University of California, Irvine scientists revealed that glacier melt in a section of West Antarctica roughly the size of France now "appears unstoppable." This likely spells doom for the entire West Antarctic ice sheet, which according to lead study author Eric Rignot "comes with a sea level rise of between three and five metres. Such an event will displace millions of people worldwide." The disintegration, however, could unfold over centuries and there is still time for emission reductions to slow down the process and prevent the worst.<sup>19</sup>

Much more frightening than any of this is the fact that plenty of mainstream analysts think that on our current emissions trajectory, we are headed for even more than 4 degrees of warming. In 2011, the usually staid International Energy Agency (IEA) issued a report projecting that we are actually on track for 6 degrees Celsius—10.8 degrees Fahrenheit—of warming. And as the IEA's chief economist put it: "Everybody, even the school children, knows that this will have catastrophic implications for all of us." (The evidence indicates that 6 degrees of warming is likely to set in motion several major tipping points—not only slower ones such as the aforementioned breakdown of the West Antarctic ice sheet, but possibly more abrupt ones, like massive releases of methane from Arctic permafrost.) The accounting giant PricewaterhouseCoopers has also published a report warning businesses that we are headed for "4°C, or even 6°C" of warming.<sup>20</sup>

These various projections are the equivalent of every alarm in your house going off simultaneously. And then every alarm on your street going off as well, one by one by one. They mean, quite simply, that climate change has become an existential crisis for the human species. The only historical precedent for a crisis of this depth and scale was the Cold War fear that we were heading toward nuclear holocaust, which would have made much of the planet

uninhabitable. But that was (and remains) a threat; a slim possibility, should geopolitics spiral out of control. The vast majority of nuclear scientists never told us that we were almost certainly going to put our civilization in peril if we kept going about our daily lives as usual, doing exactly what we were already doing, which is what the climate scientists have been telling us for years.

As the Ohio State University climatologist Lonnie G. Thompson, a world-renowned specialist on glacier melt, explained in 2010, "Climatologists, like other scientists, tend to be a stolid group. We are not given to theatrical rantings about falling skies. Most of us are far more comfortable in our laboratories or gathering data in the field than we are giving Interviews to journalists or speaking before Congressional committees. Why then are climatologists speaking out about the dangers of global warming? The answer is that virtually all of us are now convinced that global warming poses a clear and present danger to civilization."<sup>21</sup>

It doesn't get much clearer than that. And yet rather than responding with alarm and doing everything in our power to change course, large parts of humanity are, quite consciously, continuing down the same road. Only, like the passengers aboard Flight 3935, aided by a more powerful, dirtier engine.

What is wrong with us?

### **Really Bad Timing**

Many answers to that question have been offered, ranging from the extreme difficulty of getting all the governments in the world to agree on anything, to an absence of real technological solutions, to something deep in our human nature that keeps us from acting in the face of seemingly remote threats, to—more recently—the claim that we have blown it anyway and there is no point in even trying to do much more than enjoy the scenery on the way down.

Some of these explanations are valid, but all are ultimately inadequate. Take the claim that it's just too hard for so many countries to agree on a course of action. It is hard. But many times in the past, the United Nations has helped governments to come together to tackle tough cross-border challenges, from ozone depletion to nuclear proliferation. The deals produced weren't perfect, but they represented real progress. Moreover, during the same years that our governments failed to enact a tough and binding legal architecture requiring emission reductions, supposedly because cooperation was too complex, they managed to create the World Trade Organization—an intricate global system that regulates the flow of goods and services around the planet, under which the rules are clear and violations are harshly penalized.

The assertion that we have been held back by a lack of technological solutions is no more compelling. Power from renewable sources like wind and water predates the use of fossil fuels and is becoming cheaper, more efficient, and easier to store every year. The past two decades have seen an explosion of ingenious zero-waste design, as well as green urban planning. Not only do we have the technical tools to get off fossil fuels, we also have no end of small pockets where these low carbon lifestyles have been tested with tremendous success. And yet the kind of large-scale transition that would give us a collective chance of averting catastrophe eludes us.

Is it just human nature that holds us back then? In fact we humans have shown ourselves willing to collectively sacrifice in the face of threats many times, most famously in the embrace of rationing, victory gardens, and victory bonds during World Wars I and II. Indeed to support fuel conservation during World War II, pleasure driving was virtually eliminated in the U.K., and between 1938 and 1944, use of public transit went up by 87 percent in the U.S. and by 95 percent in Canada. Twenty million U.S. households—representing three fifths of the population—were growing victory gardens in 1943, and their yields accounted for 42 percent of the fresh vegetables consumed that year. Interestingly, all of these activities together dramatically reduce carbon emissions.<sup>22</sup>

Yes, the threat of war seemed immediate and concrete but so too is the threat posed by the climate crisis that has already likely been a substantial contributor to massive disasters in some of the world's major cities. Still, we've gone soft since those days of wartime sacrifice, haven't we? Contemporary humans are too self-centered, too addicted to gratification to live without the full freedom to satisfy our every whim—or so our culture tells us every day. And yet the truth is that we continue to make collective sacrifices in the name of an abstract greater good all the time. We sacrifice our pensions, our hard-won labor rights, our arts and after-school programs. We send our kids to learn in ever more crowded classrooms, led by ever more harried teachers. We accept that we have to pay dramatically more for the destructive energy sources that power our transportation and our lives. We accept that bus and subway fares go up and up while service fails to improve or degenerates. We accept that a public university education should result in a debt that will take half a lifetime to pay off when such a thing was unheard of a generation ago. In Canada, where I live, we are in the midst of accepting that our mail can no longer be delivered to our homes.

The past thirty years have been a steady process of getting less and less in the public sphere. This is all defended in the name of austerity, the current justification for these never-ending demands for collective sacrifice. In the past, other words and phrases, equally abstracted from daily life, have served a similar purpose: balanced budgets, increased efficiency, fostering economic growth.

It seems to me that if humans are capable of sacrificing this much collective benefit in the name of stabilizing an economic system that makes daily life so much more expensive and precarious, then surely humans should be capable of making some important lifestyle changes in the interest of stabilizing the physical systems upon which all of life depends. Especially because many of the changes that need to be made to dramatically cut emissions would also materially improve the quality of life for the majority of people on the planet—from allowing kids in Beijing to play outside without wearing pollution masks to creating good jobs in clean energy sectors for millions. There seems to be no shortage of both short-term and medium-term incentives to do the right thing for our climate.

Time is tight, to be sure. But we could commit ourselves, tomorrow, to radically cutting our fossil fuel emissions and beginning the shift to zero-carbon sources of energy based on renewable technology, with a full-blown transition underway within the decade. We have the tools to do that. And if we did, the seas would still rise and the storms would still come, but we would stand a much greater chance of preventing truly catastrophic warming. Indeed, entire nations could be saved from the waves. As Pablo Solon, Bolivia's former ambassador to the United Nations, puts it: "If I burned your house the least I can do is welcome you into my house . . . and if I'm burning it right now I should try to stop the fire now."<sup>23</sup>

But we are not stopping the fire. In fact we are dousing it with gasoline. After a rare decline in 2009 due to the financial crisis, global emissions surged by a whopping 5.9 percent in 2010—the largest absolute increase since the Industrial Revolution.<sup>24</sup>

So my mind keeps coming back to the question: what is wrong with us? What is really preventing us from putting out the fire that is threatening to burn down our collective house?

I think the answer is far more simple than many have led us to believe: we have not done the things that are necessary to lower emissions because those things fundamentally conflict with deregulated capitalism, the reigning ideology for the entire period we have been struggling to find a way out of this crisis. We are stuck because the actions that would give us the best chance of averting catastrophe—and would benefit the vast majority—are extremely threatening to an elite minority that has a stranglehold over our economy, our political process, and most of our major media outlets. That problem might not have been insurmountable had it presented itself at another point in our history. But it is our great collective misfortune that the scientific community made its decisive diagnosis of the climate threat at the, precise moment when those elites were enjoying more unfettered political, cultural, and intellectual power than at any point

since the 1920s. Indeed, governments and scientists began talking seriously about radical cuts to greenhouse gas emissions in 1988—the exact year that marked the dawning of what came to be called "globalization," with the signing of the agreement representing the world's largest bilateral trade relationship between Canada and the United States, later to be expanded into the North American Free Trade Agreement (NAFTA) with the inclusion of Mexico.<sup>25</sup>

When historians look back on the past quarter century of international negotiations, two defining processes will stand out. There will be the climate process: struggling, sputtering, failing utterly to achieve its goals. And there will be the corporate globalization process, zooming from victory to victory: from that first free trade deal to the creation of the World Trade Organization to the mass privatization of the former Soviet economies to the transformation of large parts of Asia into sprawling free-trade zones to the "structural adjusting" of Africa. There were setbacks to that process, to be sure—for example, popular pushback that stalled trade rounds and free trade deals. But what remained successful were the ideological underpinnings of the entire project, which was never really about trading goods across borders—selling French wine in Brazil, for instance, or U.S. software in China. It was always about using these sweeping deals, as well as a range of other tools, to lock in a global policy framework that provided maximum freedom to multinational corporations to produce their goods as cheaply as possible and sell them with as few regulations as possible—while paying as little in taxes as possible. Granting this corporate wishlist, we were told, would fuel economic growth, which would trickle down to the rest of us, eventually. The trade deals mattered only in so far as they stood in for, and plainly articulated, this far broader agenda.

The three policy pillars of this new era are familiar to us all: privatization of the public sphere, deregulation of the corporate sector, and lower corporate taxation, paid for with cuts to public spending. Much has been written about the real-world costs of these policies—the instability of financial markets, the excesses of the super-rich, and the desperation of the increasingly disposable poor, as well as the failing state of public infrastructure and services. Very little, however, has been written about how market fundamentalism has, from the very first moments, systematically sabotaged our collective response to climate change, a threat that came knocking just as this ideology was reaching its zenith.

The core problem was that the stranglehold that market logic secured over public life in this period made the most direct and obvious climate responses seem politically heretical. How, for instance, could societies invest massively in zero-carbon public services and infrastructure at a time when the public sphere was being systematically dismantled and auctioned off? How could governments heavily regulate, tax, and penalize fossil fuel companies when all such measures were being dismissed as relics of "command and control" communism? And how could the renewable energy sector receive the supports and protections it needed to replace fossil fuels when "protectionism" had been made a dirty word?

A different kind of climate movement would have tried to challenge the extreme ideology that was blocking so much sensible action, joining with other sectors to show how unfettered corporate power posed a grave threat to the habitability of the planet. Instead, large parts of the climate movement wasted precious decades attempting to make the square peg of the climate crisis fit into the round hole of deregulated capitalism, forever touting ways for the problem to be solved by the market itself. (Though it was only years into this project that I discovered the depths of collusion between big polluters and Big Green.)

But blocking strong climate action wasn't the only way that the triumph of market fundamentalism acted to deepen the crisis in this period. Even more directly, the policies that so successfully freed multinational corporations from virtually all constraints also contributed significantly to the underlying cause of global warming—rising greenhouse gas emissions. The numbers are striking: in the 1990s, as the market integration project ramped up, global emissions were going up an average of 1 percent a year; by the 2000s, with "emerging markets" like China now fully integrated into the world economy, emissions growth had sped up

disastrously, with the annual rate of increase reaching 3.4 percent a year for much of the decade. That rapid growth rate continues to this day, interrupted only briefly in 2009 by the world financial crisis.<sup>26</sup>

With hindsight, it's hard to see how it could have turned out otherwise. The twin signatures of this era have been the mass export of products across vast distances (relentlessly burning carbon all the way), and the import of a uniquely wasteful model of production, consumption, and agriculture to every corner of the world (also based on the profligate burning of fossil fuels). Put differently, the liberation of world markets, a process powered by the liberation of unprecedented amounts of fossil fuels from the earth, has dramatically sped up the same process that is liberating Arctic ice from existence.

As a result, we now find ourselves in a very difficult and slightly ironic position. Because of those decades of hardcore emitting exactly when we were supposed to be cutting back, the things we must do to avoid catastrophic warming are no longer just in conflict with the particular strain of deregulated capitalism that triumphed in the 1980s. They are now in conflict with the fundamental imperative at the heart of our economic model: grow or die. Once carbon has been emitted into the atmosphere, it sticks around for hundreds of years, some of it even longer, trapping heat. The effects are cumulative, growing more severe with time. And according to emissions specialists like the Tyndall Centre's Kevin Anderson (as well as others), so much carbon has been allowed to accumulate in the atmosphere over the past two decades that now our only hope of keeping warming below the internationally agreed-upon target of 2 degrees Celsius is for wealthy countries to cut their emissions by somewhere in the neighborhood of 8-10 percent a year.<sup>27</sup> The "free" market simply cannot accomplish this task. Indeed, this level of emission reduction has happened only in the context of economic collapse or deep depressions.

I'll be delving deeper into those numbers in Chapter 2, but the bottom line is what matters here: our economic system and our planetary system are now at war. Or, more accurately, our economy is at war with many forms of life on earth, including human life. What the climate needs to avoid collapse is a contraction in humanity's use of resources; what our economic model demands to avoid collapse is unfettered expansion. Only one of these sets of rules can be changed, and it's not the laws of nature.

Fortunately, it is eminently possible to transform our economy so that it is less resource-intensive, and to do it in ways that are equitable, with the most vulnerable protected and the most responsible bearing the bulk of the burden. Low-carbon sectors of our economies can be encouraged to expand and create jobs, while high-carbon sectors are encouraged to contract. The problem, however, is that this scale of economic planning and management is entirely outside the boundaries of our reigning ideology. The only kind of contraction our current system can manage is a brutal crash, in which the most vulnerable will suffer most of all.

So we are left with a stark choice: allow climate disruption to change everything about our world, or change pretty much everything about our economy to avoid that fate. But we need to be very clear: because of our decades of collective denial, no gradual, incremental options are now available to us. Gentle tweaks to the status quo stopped being a climate option when we supersized the American Dream in the 1990s, and then proceeded to take it global. And it's no longer just radicals who see the need for radical change. In 2012, twenty-one past winners of the prestigious Blue Planet Prize—a group that includes James Hansen, former director of NASA's Goddard Institute for Space Studies, and Gro Harlem Brundtland, former prime minister of Norway—authored a landmark report. It stated that, "In the face of an absolutely unprecedented emergency, society has no choice but to take dramatic action to avert a collapse of civilization. Either we will change our ways and build an entirely new kind of global society, or they will be changed for us."<sup>28</sup>

That's tough for a lot of people in important positions to accept, since it challenges something that might be even more powerful than capitalism, and that is the fetish of centrism—of reasonableness, seriousness, splitting the difference, and generally not getting overly excited

about anything. This is the habit of thought that truly rules our era, far more among the liberals who concern themselves with matters of climate policy than among conservatives, many of whom simply deny the existence of the crisis. Climate change presents a profound challenge to this cautious centrism because half measures won't cut it: "all of the above energy" programs, as U.S. President Barack Obama describes his approach, has about as much chance of success as an all of the above diet, and the firm deadlines imposed by science require that we get very worked up indeed.

By posing climate change as a battle between capitalism and the planet, I am not saying anything that we don't already know. The battle is already under way, but right now capitalism is winning hands down. It wins every time the need for economic growth is used as the excuse for putting off climate action yet again, or for breaking emission reduction commitments already made. It wins when Greeks are told that their only path out of economic crisis is to open up their beautiful seas to high-risk oil and gas drilling. It wins when Canadians are told our only hope of not ending up like Greece is to allow our boreal forests to be flayed so we can access the semisolid bitumen from the Alberta tar sands. It wins when a park in Istanbul is slotted for demolition to make way for yet another shopping mall. It wins when parents in Beijing are told that sending their wheezing kids to school in pollution masks decorated to look like cute cartoon characters is an acceptable price for economic progress. It wins every time we accept that we have only bad choices available to us: austerity or extraction, poisoning or poverty.

The challenge, then, is not simply that we need to spend a lot of money and change a lot of policies; it's that we need to think differently, radically differently, for those changes to be remotely possible. Right now, the triumph of market logic, with its ethos of domination and fierce competition, is paralyzing almost all serious efforts to respond to climate change. Cutthroat competition between nations has deadlocked U.N. climate negotiations for decades: rich countries dig in their heels and declare that they won't cut emissions and risk losing their vaulted position in the global hierarchy; poorer countries declare that they won't give up their right to pollute as much as rich countries did on their way to wealth, even if that means deepening a disaster that hurts the poor most of all. For any of this to change, a worldview will need to rise to the fore that sees nature, other nations, and our own neighbors not as adversaries, but rather as partners in a grand project of mutual reinvention.

That's a big ask. But it gets bigger. Because of our endless delays, we also have to pull off this massive transformation without delay. The International Energy Agency warns that if we do not get our emissions under control by a rather terrifying 2017, our fossil fuel economy will "lock-in" extremely dangerous warming. "The energy-related infrastructure then in place will generate all the CO<sub>2</sub> emissions allowed" in our carbon budget for limiting warming to 2 degrees Celsius — "leaving no room for additional power plants, factories and other infrastructure unless they are zero-carbon, which would be extremely costly." This assumes, probably accurately, that governments would be unwilling to force the closure of still-profitable power plants and factories. As Fatih Birol, the IEA's chief economist, bluntly put it: "The door to reach two degrees is about to close. In 2017 it will be closed forever." In short, we have reached what some activists have started calling "Decade Zero" of the climate crisis: we either change now or we lose our chance.<sup>29</sup>

All this means that the usual free market assurances—A techno-fix is around the corner! Dirty development is just a phase on the way to a clean environment, look at nineteenth-century London!—simply don't add up. We don't have a century to spare for China and India to move past their Dickensian phases. Because of our lost decades, it is time to turn this around now. Is it possible? Absolutely. Is it possible without challenging the fundamental logic of deregulated capitalism? Not a chance.

One of the people I met on this journey and who you will meet in these pages is Henry Red Cloud, a Lakota educator and entrepreneur who trains young Native people to become solar engineers. He tells his students that there are times when we must accept small steps

forward—and there are other times "when you need to run like a buffalo."<sup>30</sup> Now is one of those times when we must run.

### **Power, Not Just Energy**

I was struck recently by a mea culpa of sorts, written by Gary Stix, a senior editor of *Scientific American*. Back in 2006, he edited a special issue on responses to climate change and, like most such efforts, the articles were narrowly focused on showcasing exciting low-carbon technologies. But in 2012 Stix wrote that he had overlooked a much larger and more important part of the story—the need to create the social and political context in which these technological shifts stand a chance of displacing the all too profitable status quo. "If we are ever to cope with climate change in any fundamental way, radical solutions on the social side are where we must focus, though. The relative efficiency of the next generation of solar cells is trivial by comparison."<sup>31</sup>

This book is about those radical changes on the social side, as well as on the political, economic, and cultural sides. What concerns me is less the mechanics of the transition—the shift from brown to green energy, from sole-rider cars to mass transit, from sprawling exurbs to dense and walk-able cities—than the power and ideological roadblocks that have so far prevented any of these long understood solutions from taking hold on anything close to the scale required.

It seems to me that our problem has a lot less to do with the mechanics of solar power than the politics of human power—specifically whether there can be a shift in who wields it, a shift away from corporations and toward communities, which in turn depends on whether or not the great many people who are getting a rotten deal under our current system can build a determined and diverse enough social force to change the balance of power. I have also come to understand, over the course of researching this book, that the shift will require rethinking the very nature of humanity's power—our right to extract ever more without facing consequences, our capacity to bend complex natural systems to our will. This is a shift that challenges not only capitalism, but also the building blocks of materialism that preceded modern capitalism, a mentality some call "extractivism."

Because, underneath all of this is the real truth we have been avoiding! climate change isn't an "issue" to add to the list of things to worry about, next to health care and taxes. It is a civilizational wake-up call. A powerful message—spoken in the language of fires, floods, droughts, arid extinctions—telling us that we need an entirely new economic model and a new way of sharing this planet. Telling us that we need to evolve.

### **Coming Out of Denial**

Some say there is no time for this transformation; the crisis is too pressing and the clock is ticking. I agree that it would be reckless to claim that the only solution to this crisis is to revolutionize our economy and revamp our worldview from the bottom up—and anything short of that is not worth doing. There are all kinds of measures that would lower emissions substantively that could and should be done right now. But we aren't taking those measures, are we? The reason is that by failing to fight these big battles that stand to shift our ideological direction and change the balance of who holds power in our societies, a context has been slowly created in which any muscular response to climate change seems politically impossible, especially during times of economic crisis (which lately seems to be all the time).

So this book proposes a different strategy: think big, go deep, and move the ideological pole far away from the stifling market fundamentalism that has become the greatest enemy to planetary health. If we can shift the cultural context even a little, then there will be some breathing room for those sensible reformist policies that will at least get the atmospheric carbon

numbers moving in the right direction. And winning is contagious so, who knows? Maybe within a few years, some of the ideas highlighted in these pages that sound impossibly radical today—like a basic income for all, or a rewriting of trade law, or real recognition of the rights of Indigenous people to protect huge parts of the world from polluting extraction—will start to seem reasonable, even essential.

For a quarter of a century, we have tried the approach of polite incremental change, attempting to bend the physical needs of the planet to our economic model's need for constant growth and new profit-making opportunities. The results have been disastrous, leaving us all in a great deal more danger than when the experiment began.

There are, of course, no guarantees that a more systemic approach will be any more successful—though there are, as will be explored later on, historical precedents that are grounds for hope. The truth is that this is the hardest book I have ever written, precisely because the research has led me to search out such radical responses. I have no doubt of their necessity, but I question their political feasibility every day, especially given that climate change puts us on such a tight and unforgiving deadline.

It's been a harder book to write for personal reasons too.

What gets me most are not the scary scientific studies about melting glaciers, the ones I used to avoid. It's the books I read to my two-year-old. *Have You Ever Seen a Moose?* is one of his favorites. It's about a bunch of kids that really, really, really want to see a moose. They search high and low—through a forest, a swamp, in brambly bushes and up a mountain, for "a long legged, bulgy nosed, branchy antlered moose." The joke is that there are moose hiding on each page. In the end, the animals all come out of hiding and the ecstatic kids proclaim: "We've never ever seen so many moose!"

On about the seventy-fifth reading, it suddenly hit me: he might never see a moose. I tried to hold it together. I went back to my computer and began to write about my time in northern Alberta, tar sands country, where members of the Beaver Lake Cree Nation told me about how the moose had changed—one woman described killing a moose on a hunting trip only to find that the flesh had already turned green. I heard a lot about strange tumors too, which locals assumed had to do with the animals drinking water contaminated by tar sands toxins. But mostly I heard about how the moose were simply gone.

And not just in Alberta. "Rapid Climate Changes Turn North Woods into Moose Graveyard," reads a May 2012 headline in *Scientific American*. A year and a half later, *The New York Times* was reporting that one of Minnesota's two moose populations had declined from four thousand in the 1990s to just one hundred today.<sup>32</sup>

Will he ever see a moose?

Then, the other day, I was slain by a miniature board book called *Snuggle Wuggle*. It involves different animals cuddling, with each posture given a ridiculously silly name: "How does a bat hug?" it asks. "Topsy turvy, topsy turvy." For some reason my son reliably cracks up at this page. I explain that it means upside down, because that's the way bats sleep.

But all I could think about was the report of some 100,000 dead and dying bats raining down from the sky in the midst of record-breaking heat across part of Queensland, Australia. Whole colonies devastated.<sup>33</sup>

Will he ever see a bat?

I knew I was in trouble when the other day I found myself bargaining with starfish. Red and purple ones are ubiquitous on the rocky coast of British Columbia where my parents live, where my son was born, and where I have spent about half of my adult life. They are always the biggest kid pleasers, because you can gently pick one up and give it a really good look. "This is

the best day of my life!" my seven-year-old niece Miriam, visiting from Chicago, proclaimed after a long afternoon spent in the tide pools.

But in the fall of 2013, stories began to appear about a strange wasting disease that was causing starfish along the Pacific Coast to die by the tens of thousands. Termed the "sea star wasting syndrome," multiple species were disintegrating alive, their vibrant bodies melting into distorted globs, with legs falling off and bodies caving in. Scientists were mystified.<sup>34</sup>

As I read these stories, I caught myself praying for the invertebrates to hang in for just one more year—long enough for my son to be amazed by them. Then I doubted myself: maybe it's better if he never sees a starfish at all—certainly not like this. . .

When fear like that used to creep through my armor of climate change denial, I would do my utmost to stuff it away, change the channel, click past it. Now I try to feel it. It seems to me that I owe it to my son, just as we all owe it to ourselves and one another.

But what should we do with this fear that comes from living on a planet that is dying, made less alive every day? First, accept that it won't go away. That it is a fully rational response to the unbearable reality that we are living in a dying world, a world that a great many of us are helping to kill, by doing things like making tea and driving to the grocery store and yes, okay, having kids.

Next, use it. Fear is a survival response. Fear makes us run, it makes us leap, it can make us act superhuman. But we need somewhere to run *to*. Without that, the fear is only paralyzing. So the real trick, the only hope, really, is to allow the terror of an unlivable future to be balanced and soothed by the prospect of building something much better than many of us have previously dared hope.

Yes, there will be things we will lose, luxuries some of us will have to give up, whole industries that will disappear. And it's too late to stop climate change from coming; it is already here, and increasingly brutal disasters are headed our way no matter what we do. But it's not too late to avert the worst, and there is still time to change ourselves so that we are far less brutal to one another when those disasters strike. And that, it seems to me, is worth a great deal.

Because the thing about a crisis this big, this all-encompassing, is that it changes everything. It changes what we can do, what we can hope for, what we can demand from ourselves and our leaders. It means there is a whole lot of stuff that we have been told is inevitable that simply cannot stand. And it means that a whole lot of stuff we have been told is impossible has to start happening right away.

Can we pull it off? All I know is that nothing is inevitable. Nothing except that climate change changes everything. And for a very brief time, the nature of that change is still up to us.

## Chapter 1

### The Right is Right: The Revolutionary Power of Climate Change

*"Coal, in truth, stands not beside but entirely above all other commodities. It is the material energy of the country-the universal aid-the factor in everything we do."*

-William Stanley Jevons, economist, 1865<sup>1</sup>

*"How sad to think that nature speaks and mankind doesn't listen."*

-Victor Hugo, 1840<sup>2</sup>

*"Climate scientists agree: climate change is happening here and now. Based on well-established evidence, about 97 percent of climate scientists have concluded that human-caused climate change is happening. This agreement is documented not just by a single study, but by a converging stream of evidence over the past two decades from surveys of scientists, content analyses of peer-reviewed studies, and public statements issued by virtually every membership organization of experts in this field."*

-Report by the American Association for the Advancement of Science, 2014<sup>1</sup>

*"There is no way this can be done without fundamentally changing the American way of life, choking off economic development, and putting large segments of our economy out of business."*

-Thomas J. Donohue, President of the U.S. Chamber of Commerce, on ambitious carbon reduction<sup>2</sup>

There is a question from a gentleman in the fourth row.

He introduces himself as Richard Rothschild. He tells the crowd that he ran for county commissioner in Maryland's Carroll County because he had come to the conclusion that policies to combat global warming were actually "an attack on middle-class American capitalism." His question for the panelists, gathered in a Washington, D.C., Marriott, is: "To what extent is this entire movement simply a green Trojan horse, whose belly is full with red Marxist socioeconomic doctrine?"<sup>3</sup>

At the Heartland Institute's Sixth International Conference on Climate Change, held in late June 2011, the premier gathering for those dedicated to denying the overwhelming scientific consensus that human activity is warming the planet, this qualifies as a rhetorical question. Like asking a meeting of German central bankers if Greeks are untrustworthy. Still, the panelists aren't going to pass up an opportunity to tell the questioner just how right he is.

First up is Marc Morano, editor of the denialists' go-to news site Climate Depot. "In America today we are regulated down to our shower heads, to our light bulbs, to our washing machines," he says. And "we're allowing the American SUV to die right before our eyes." If the greens have their way, Morano warns, we will be looking at "a CO<sub>2</sub> budget for every man, woman, and child on the planet, monitored by an international body."<sup>4</sup>

Next is Chris Horner, a senior fellow at the Competitive Enterprise Institute who specializes in harassing climate scientists with burdensome lawsuits and Freedom of Information Act fishing expeditions. He angles the table mic over to his mouth. "You can believe this is about the climate," he says darkly, "and many people do, but it's not a reasonable belief." Horner, whose prematurely silver hair makes him look like Anderson Cooper's frat boy doppelganger, likes to invoke 1960s counterculture icon Saul Alinsky: "The issue isn't the issue." The issue,

apparently, is that "no free society would do to itself what this agenda requires. . . . The first step. to [doing] that is to remove these nagging freedoms that keep getting in the way."<sup>5</sup>

Claiming that climate change is a plot to steal American freedom is rather tame by Heartland standards. Over the course of this two-day conference, I will hear modern environmentalism compared to virtually every mass-murderous chapter in human history, from the Catholic Inquisition to Nazi Germany to Stalin's Russia. I will learn that Barack Obama's campaign promise to support locally owned biofuels refineries was akin to Chairman Mao's scheme to put "a pig iron furnace in everybody's backyard" (the Cato Institute's Patrick Michaels). That climate change is "a stalking horse for National Socialism" (former Republican senator and retired astronaut Harrison Schmitt, referencing the Nazis). And that environmentalists are like Aztec priests, sacrificing countless people to appease the gods and change the weather (Marc Morano again).<sup>6</sup>

But most of all, I will hear versions of the opinion expressed by the county commissioner in the fourth row: that climate change is a Trojan horse designed to abolish capitalism and replace it with some kind of "green communitarianism." As conference speaker Larry Bell succinctly puts it in his book *Climate of Corruption*, climate change "has little to do with the state of the environment and much to do with shackling capitalism and transforming the American way of life in the interests of global wealth redistribution."<sup>7</sup>

Yes, there is a pretense that the delegates' rejection of climate science is rooted in serious disagreement about the data. And the organizers go to some lengths to mimic credible scientific conferences, calling the gathering "Restoring the Scientific Method" and even choosing a name, the International Conference on Climate Change, that produces an organizational acronym, ICCC, just one letter off from that of the world's leading authority on climate change, the United Nations' Intergovernmental Panel on Climate Change (IPCC), a collaboration of thousands of scientists and 195 governments. But the various contrarian theses presented at the Heartland conference—tree rings, sunspots, the Medieval Warm Period—are old news and were thoroughly debunked long ago. And most of the speakers are not even scientists but rather hobbyists: engineers, economists, and lawyers, mixed in with a weatherman, an astronaut, and a "space architect"—all convinced they have outsmarted 97 percent of the world's climate scientists with their back-of-the-envelope calculations.<sup>8</sup>

Australian geologist Bob Carter questions whether warming is happening at all, while astrophysicist Willie Soon acknowledges some warming has occurred, but says it has nothing to do with greenhouse emissions and is instead the result of natural fluctuations in the activity of the sun. Cato's Patrick Michaels contradicts them both by conceding that CO<sub>2</sub> is indeed increasing temperatures, but insists the impacts are so minor we should "do nothing" about it. Disagreement is the lifeblood of any intellectual gathering, but at the Heartland conference, this wildly contradictory material sparks absolutely no debate among the deniers—no one attempts to defend one position over another, or to sort out who is actually correct. Indeed as the temperature graphs are presented, several members of the mostly elderly audience seem to doze off.<sup>9</sup>

The entire room comes to life, however, when the rock stars of the movement take the stage—not the C-team scientists but the A-team ideological warriors like Morano and Horner. This is the true purpose of the gathering: providing a forum for die-hard denialists to collect the rhetorical cudgels with which they will attempt to club environmentalists and climate scientists in the weeks and months to come. The talking points tested here will jam the comment sections beneath every article and You-Tube video that contains the phrase "climate change" or "global warming." They will also fly from the mouths of hundreds of right-wing commentators and politicians—from Republican presidential hopefuls all the way down to county commissioners like Richard Rothschild. In an interview outside the sessions, Joseph Bast, president of the Heartland Institute, takes credit for "thousands of articles and op-eds and speeches. . . that were informed by or motivated by somebody attending one of these conferences."<sup>10</sup>

More impressive, though left unspoken, are all the news stories that were never published and never aired. The years leading up to the gathering had seen a precipitous collapse of media coverage of climate change, despite a rise in extreme weather: in 2007, the three major U.S. networks—CBS, NBC, and ABC—ran 147 stories on climate change; in 2011 the networks ran just fourteen stories on the subject. That too is the denier strategy at work, because the goal was never just to spread doubt but also to spread fear—to send a clear message that saying anything at all about climate change was a surefire way to find your inbox and comment threads jammed with a toxic strain of vitriol.<sup>11</sup>

The Heartland Institute, a Chicago-based think tank devoted to "promoting free-market solutions," has been holding these confabs since 2008, sometimes twice a year. And at the time of the gathering, the strategy appeared to be working. In his address, Morano—whose claim to fame is having broken the Swift Boat Veterans for Truth story that helped sink John Kerry's 2004 presidential bid—led the audience through a series of victory laps. Climate legislation in the U.S. Senate: dead! The U.N. summit on climate change in Copenhagen: failure! The climate movement: suicidal! He even projected on a screen a couple of quotes from climate activists beating up on themselves (as progressives do so well) and exhorted the audience to "celebrate!"<sup>12</sup>

The only things missing were balloons and confetti descending from the rafters.

When public opinion on the big social and political issues changes, the trends tend to be relatively gradual. Abrupt shifts, when they come, are usually precipitated by dramatic events. Which is why pollsters were so surprised by what had happened to perceptions about climate change in just four years. A 2007 Harris poll found that 71 percent of Americans believed that the continued burning of fossil fuels would alter the climate. By 2009 the figure had dropped to 51 percent. In June 2011 the number was down to 44 percent—well under half the population. Similar trends have been tracked in the U.K. and Australia, Scott Keeter, director of survey research at the Pew Research Center for People & the Press, described the statistics in the United States as "among the largest shifts over a short period of time seen in recent public opinion history."<sup>13</sup>

The overall belief in climate change has rebounded somewhat since its 2010-11 low in the United States. (Some have hypothesized that experience with extreme weather events could be contributing, though "the evidence is at best very sketchy at this point," says Riley Dunlap, a sociologist at Oklahoma State University who specializes in the politics of climate change.) But what remains striking is that on the right-wing side of the political spectrum, the numbers are still way down.<sup>14</sup>

It seems hard to believe today, but as recently as 2008, tackling climate change still had a veneer of bipartisan support, even in the United States. That year, Republican stalwart Newt Gingrich did a TV spot with Democratic congresswoman Nancy Pelosi, then Speaker of the House, in which they pledged to join forces and fight climate change together. And in 2007, Rupert Murdoch—whose Fox News channel relentlessly amplifies the climate change denial movement—launched an incentive program at Fox to encourage employees, to buy hybrid cars (Murdoch announced he had purchased one himself).

Those days of bipartisanship are decidedly over. Today, more than 75 percent of self-identified Democrats and liberals believe humans are changing the climate—a level that, despite yearly fluctuations, has risen only slightly since 2001. In sharp contrast, Republicans have overwhelmingly chosen to reject the scientific consensus. In some regions, only about 20 percent of self-identified Republicans accept the science. This political rift can also be found in Canada. According to an October 2013 poll conducted by Environics, only 41 percent of respondents who identify with the ruling Conservative Party believe that climate change is real

and human-caused, while 76 percent of supporters of the left-leaning New Democratic Party and 69 percent of supporters of the centrist Liberal Party believe it is real. And the same phenomenon has once again been documented in Australia and the U.K., as well as Western Europe.<sup>15</sup>

Ever since this political divide opened up over climate change, a great deal of social science research has been devoted to pinpointing precisely how and why political beliefs are shaping attitudes toward global warming. According to Yale's Cultural Cognition Project, for example, one's "cultural worldview"—that would be political leanings or ideological outlook to the rest of us—explains "individuals' beliefs about global warming more powerfully than any other individual characteristic."<sup>16</sup> More powerfully, that is, than age, ethnicity, education, or party affiliation.

The Yale researchers explain that people with strong "egalitarian" and "communitarian" worldviews (marked by an inclination toward collective action and social justice, concern about inequality, and suspicion of corporate power) overwhelmingly accept the scientific consensus on climate change. Conversely, those with strong "hierarchical" and "individualistic" worldviews (marked by opposition to government assistance for the poor and minorities, strong support for industry, and a belief that we all pretty much get what we deserve) overwhelmingly reject the scientific consensus.<sup>17</sup>

The evidence is striking. Among the segment of the U.S. population that displays the strongest "hierarchical" views, only 11 percent rate climate change as a "high risk," compared with 69 percent of the segment displaying the strongest "egalitarian" views.<sup>18</sup>

Yale law professor Dan Kahan, the lead author on this study, attributes the tight correlation between "worldview" and acceptance of climate science to "cultural cognition," the process by which all of us—regardless of political leanings—filter new information in ways that will protect our "preferred vision of the good society." If new information seems to confirm that vision, we welcome it and integrate it easily. If it poses a threat to our belief system, then our brain immediately gets to work producing intellectual antibodies designed to repel the unwelcome invasion.<sup>19</sup>

As Kahan explained in *Nature*, "People find it disconcerting to believe that behavior that they find noble is nevertheless detrimental to society, and behavior that they find base is beneficial to it. Because accepting such a claim could drive a wedge between them and their peers, they have a strong emotional predisposition to reject it." In other words, it is always easier to deny reality than to allow our worldview to be shattered, a fact that was as true of die-hard Stalinists at the height of the purges as it is of libertarian climate change deniers today. Furthermore, leftists are equally capable of denying inconvenient scientific evidence. If conservatives are inherent system justifiers, and therefore bridle before facts that call the dominant economic system into question, then most leftists are inherent system questioners, and therefore prone to skepticism about facts that come from corporations and government. This can lapse into the kind of fact resistance we see among those who are convinced that multinational drug companies have covered up the link between childhood vaccines and autism. No matter what evidence is marshaled to disprove their theories, it doesn't matter to these crusaders—it's just the system covering up for itself.

This kind of defensive reasoning helps explain the rise of emotional intensity that surrounds the climate issue today. As recently as 2007, climate change was something most everyone acknowledged was happening—they just didn't seem to care very much. (When Americans are asked to rank their political concerns in order of priority, climate change still consistently comes in last.)<sup>21</sup>

But today there is a significant cohort of voters in many countries who care passionately, even obsessively, about climate change. What they care about, however, is exposing it as a "hoax" being perpetrated by liberals to force them to change their light bulbs, live in Soviet-style tenements, and surrender their SUVs. For these right-wingers, opposition to climate change has

become as central to their belief system as low taxes, gun ownership, and opposition to abortion. Which is why some climate scientists report receiving the kind of harassment that used to be reserved for doctors who perform abortions. In the Bay Area of California, local Tea Party activists have disrupted municipal meetings when minor sustainability strategies are being discussed, claiming they are part of a U.N.-sponsored plot to usher in world government. As Heather Gass of the East Bay Tea Party put it in an open letter after one such gathering: "One day (in 2035) you will wake up in subsidized government housing, eating government subsidized food, your kids will be whisked off by government buses to indoctrination training centers while you are working at your government assigned job on the bottom floor of your urban transit center village because you have no car and who knows where your aging parents will be but by then it will be too late! WAKE UP!!!!"<sup>22</sup>

Clearly there is something about climate change that has some people feeling very threatened indeed.

### **Unthinkable Truths**

Walking past the lineup of tables set up by the Heartland conference's sponsors, it's not terribly hard to see what's going on. The Heritage Foundation is hawking reports, as are the Cato Institute and the Ayn Rand Institute. The climate change denial movement—far from an organic convergence of "skeptical" scientists—is entirely a creature of the ideological network on display here, the very one that deserves the bulk of the credit for redrawing the global ideological map over the last four decades. A 2013 study by Riley Dunlap and political scientist Peter Jacques found that a striking 72 percent of climate denial books, mostly published since the 1990s, were linked to right-wing think tanks, a figure that rises to 87 percent if self-published books (increasingly common) are excluded.<sup>23</sup>

Many of these institutions were created in the late 1960s and early 1970s, when U.S. business elites feared that public opinion was turning dangerously against capitalism and toward, if not socialism, then an aggressive Keynesianism. In response, they launched a counterrevolution, a richly funded intellectual movement that argued that greed and the limitless pursuit of profit were nothing to apologize for and offered the greatest hope for human emancipation that the world had ever known. Under this liberationist banner, they fought for such policies as tax cuts, free trade deals, for the auctioning off of core state assets from phones to energy to water—the package known in most of the world as "neoliberalism."

At the end of the 1980s, after a decade of Margaret Thatcher at the helm in the U.K. and Ronald Reagan in the United States, and with communism collapsing, these ideological warriors were ready to declare victory: history was officially over and there was, in Thatcher's often repeated words, "no alternative" to their market fundamentalism. Filled with confidence, the next task was to systematically lock in the corporate liberation project in every country that had previously held out, which was usually best accomplished in the midst of political turmoil and large-scale economic crises, and further entrenched through free trade agreements and membership in the World Trade Organization.

It had all been going so well. The project had even managed to survive, more or less, the 2008 financial collapse directly caused by a banking sector that had been liberated of so much burdensome regulation and oversight. But to those gathered here at the Heartland conference, climate change is a threat of a different sort. It isn't about the political preference of Republicans versus Democrats; it's about the physical boundaries of tin: atmosphere and ocean. If the dire projections coming out of the IPCC are left unchallenged, and business as usual is indeed driving us straight toward civilization-threatening tipping points, then the implications are obvious: the ideological crusade incubated in think tanks like Heartland, Cato, and Heritage will have to come to a screeching halt. Nor have the various attempts to soft-pedal climate action as compatible with market logic (carbon trading, carbon offsets, monetizing nature's "services")

fooled these true believers one bit. They know very well that ours is a global economy created by, and fully reliant upon, the burning of fossil fuels and that a dependency that foundational cannot be changed with a few gentle market mechanisms. It requires heavy-duty interventions: sweeping bans on polluting activities, deep subsidies for green alternatives, pricey penalties for violations, new taxes, new public works programs, reversals of privatizations—the list of ideological outrages goes on and on. Everything, in short, that these think tanks—which have always been public proxies for far more powerful corporate interests—have been busily attacking for decades.

And there is also the matter of "global equity" that keeps coming up in the climate negotiations. The equity debate is based on the simple scientific fact that global warming is caused by the accumulation of greenhouse gases in the atmosphere over two centuries. That means that the countries that got a large head start on industrialization have done a great deal more emitting than most others. And yet many of the countries that have emitted least are getting hit by the impacts of climate change first and worst (the result of geographical bad luck as well as the particular vulnerabilities created by poverty). To address this structural inequity sufficiently to persuade fast-growing countries like China and India not to destabilize the global climate system, earlier emitters, like North America and Europe, will have to take a greater share of the burden at first. And there will obviously need to be substantial transfers of resources and technology to help battle poverty using low carbon tools. This is what Bolivia's climate negotiator Angelica Navarro Llanos meant when she called for a Marshall Plan for the Earth. And it is this sort of wealth redistribution that represents the direst of thought crimes at a place like the Heartland Institute.

Even climate action at home looks suspiciously like socialism to them; all the calls for high-density affordable housing and brand-new public transit are obviously just ways to give backdoor subsidies to the undeserving poor. Never mind what this war on carbon means to the very premise of global free trade, with its insistence that geographical distance is a mere fiction to be collapsed by Walmart's diesel trucks and Maersk's container ships.

More fundamentally than any of this, though, is their deep fear that if the free market system really has set in motion physical and chemical processes that, if allowed to continue unchecked, threaten large parts of humanity at an existential level, then their entire crusade to morally redeem capitalism has been for naught. With stakes like these, clearly greed is not so very good after all. And that is what is behind the abrupt rise in climate change denial among hardcore conservatives: they have come to understand that as soon as they admit that climate change is real, they will lose the central ideological battle of our time—whether we need to plan and manage our societies to reflect our goals and values, or whether that task can be left to the magic of the market.

Imagine, for a moment, how all of this looks to a guy like Heartland president Joseph Bast, a genial bearded fellow who studied economics at the University of Chicago and who told me in a sit-down interview that his personal calling is "freeing people from the tyranny of other people."<sup>24</sup> To Bast, climate action looks like the end of the world. It's not, or at least it doesn't have to be, but, for all intents and purposes, robust, science-based emission reduction is the end of his world. Climate change detonates the ideological scaffolding on which contemporary conservatism rests. A belief system that vilifies collective action and declares war on all corporate regulation and all things public simply cannot be reconciled with a problem that demands collective action on an unprecedented scale and a dramatic reining in of the market forces that are largely responsible for creating and deepening the crisis.

And for many conservatives, particularly religious ones, the challenge goes deeper still, threatening not just faith in markets but core cultural narratives about what humans are doing here on earth. Are we masters, here to subdue and dominate, or are we one species among many, at the mercy of powers more complex and unpredictable than even our most powerful computers can model? As Robert Manne, a professor of politics at La Trobe University in

Melbourne, puts it, climate science is for many conservatives "an affront to their deepest and most cherished basic faith: the capacity and indeed the right of 'mankind' to subdue the Earth and all its fruits and to establish a 'mastery' over Nature." For these conservatives, he notes, "such a thought is not merely mistaken. It is intolerable and deeply offensive. Those preaching this doctrine have to be resisted and indeed denounced."<sup>25</sup> And denounce they do, the more personal, the better—whether it's former Vice President Al Gore for his mansions, or famed climate scientist James Hansen for his speaking fees. Then there is "Climategate," a manufactured scandal in which climate scientists' emails were hacked and their contents distorted by the Heartlanders and their allies, who claimed to find evidence of manipulated data (the scientists were repeatedly vindicated of wrongdoing). In 2012, the Heartland Institute even landed itself in hot water by running a billboard campaign that compared people who believe in climate change ("warmists" in denialist lingo) to murderous cult leader Charles Manson and Unabomber Ted Kaczynski. "I still believe in Global Warming. Do you?" the first ad demanded in bold red letters under a picture of Kaczynski. For Heartlanders, denying climate science is part of a war, and they act like it.<sup>26</sup>

Many deniers are quite open about the fact that their distrust of the science grew out of a powerful fear that if climate change is real, the political implications would be catastrophic. As British blogger and regular Heartland speaker James Delingpole has pointed out, "Modern environmentalism successfully advances many of the causes dear to the left: redistribution of wealth, higher taxes, greater government intervention, regulation." Heartland president Joseph Bast puts it even more bluntly. For the left, "Climate change is the perfect thing. . . . It's the reason why we should do everything [the left] wanted to do anyway."<sup>27</sup>

Bast, who has little of the swagger common to so many denialists, is equally honest about the fact he and his colleagues did not become engaged with climate issues because they found flaws in the scientific facts. Rather, they became alarmed about the economic and political implications of those facts and set out to disprove them. "When we look at this issue, we say, This is a recipe for massive increase in government," Bast told me, concluding that, "Before we take this step, let's take another look at the science. So conservative and libertarian groups, I think, stopped and said, Let's not simply accept this as an article of faith; let's actually do our own research."<sup>28</sup>

Nigel Lawson, Margaret Thatcher's former chancellor of the exchequer who has taken to declaring that "green is the new red," has followed a similar intellectual trajectory. Lawson takes great pride in having privatized key British assets, lowered taxes on the wealthy, and broken the power of large unions. But climate change creates, in his words, "a new license to intrude, to interfere and to regulate." It must, he concludes, be a conspiracy—the classic teleological reversal of cause and effect.<sup>29</sup>

The climate change denial movement is littered with characters who are twisting themselves in similar intellectual knots. There are the old-timer physicists like S. Fred Singer, who used to develop rocket technologies for the U.S. military and who hears in emissions regulation a distorted echo of the communism he fought during the Cold War (as documented compellingly by Naomi Oreskes and Erik Conway in *Merchants of Doubt*). In a similar vein, there is former Czech president Vaclav Klaus, who spoke at a Heartland climate conference while still head of state. For Klaus, whose career began under communist rule, climate change appears to have induced a full-fledged Cold War flashback. He compares attempts to prevent global warming to "the ambitions of communist central planners to control the entire society" and says, "For someone who spent most of his life in the 'noble' era of communism this is impossible to accept."<sup>30</sup>

And you can understand that, from their perspective, the scientific reality of climate change must seem spectacularly unfair. After all, the people at the Heartland conference thought they had won these ideological wars—if not fairly, then certainly squarely. Now climate science is changing everything: how can you win an argument against government intervention if the very

habitability of the planet depends on intervening? In the short term, you might be able to argue that the economic costs of taking action are greater than allowing climate change to play out for a few more decades (and some neoliberal economists, using cost-benefit calculations and future "discounting," are busily making those arguments). But most people don't actually like it when their children's lives are "discounted" in someone else's Excel sheet, and they tend to have a moral aversion to the idea of allowing countries to disappear because saving them would be too expensive.

Which is why the ideological warriors gathered at the Marriott have concluded that there is really only one way to beat a threat this big: by claiming that thousands upon thousands of scientists are lying and that climate change is an elaborate hoax. That the storms aren't really getting bigger, it's just our imagination. And if they are, it's not because of anything hum a no are doing—or could stop doing. They deny reality, in other words, because the implications of that reality are, quite simply, unthinkable.

So here's my inconvenient truth: I think these hard-core ideologues understand the real significance of climate change better than most of the "warmists" in the political center, the ones who are still insisting that: the response can be gradual and painless and that we don't need to go to w;ii: with anybody, including the fossil fuel companies. Before I go any further, let me be absolutely clear: as 97 percent of the world's climate scientists attest, the Heartlanders are completely wrong about the science. But when it comes to the political and economic *consequences* of those scientific findings, specifically the kind of deep changes required not just to our energy consumption but to the underlying logic of our liberalized and profit- eeking economy, they have their eyes wide open. The deniers get plenty of the details wrong (no, it's not a communist plot; authoritarian state socialism, as we will see, was terrible for the environment and brutally extractivist), but when it comes to the scope and depth of change required to avert catastrophe, they are right on the money.

### **About That Money...**

When powerful ideologies are challenged by hard evidence from the real world, they rarely die off completely. Rather, they become cultlike and marginal. A few of the faithful always remain to tell one another that the problem wasn't with the ideology;, it was the weakness of leaders who did not apply the rules with sufficient rigor. (Lord knows there is still a smattering of such grouplets on the neo-Stalinist far left.) By this point in history—after the 2008 collapse of Wall Street and in the midst of layers of ecological crises—free market fundamentalists should, by all rights, be exiled to a similarly irrelevant status, left to fondle their copies of Milton Friedman's *Free to Choose* and Ayn Rand's *Atlas Shrugged* in obscurity. They are saved from this ignominious fate only because their ideas about corporate liberation, no matter how demonstrably at war with reality, remain so profitable to the world's billionaires that they are kept fed and clothed in think tanks by the likes of Charles and David Koch, owners of the diversified dirty energy giant Koch Industries, and ExxonMobil.

According to one recent study, for instance, the denial-espousing think tanks and other advocacy groups making up what sociologist Robert Brulle calls the "climate change counter-movement" are collectively pulling in more than \$900 million per year for their work on a variety of right-wing causes, most of it in the form of "dark money"—funds from conservative foundations that cannot be fully traced.<sup>31</sup>

This points to the limits of theories like cultural cognition that focus exclusively on individual psychology. The deniers are doing more than protecting their personal worldviews—they are protecting powerful political and economic interests that have gained tremendously from the way Heartland and others have clouded the climate debate. The ties between the deniers and those interests are well known and well documented. Heartland has received more than \$1 million from ExxonMobil together with foundations linked to the Koch brothers and the late

conservative funder Richard Mellon Scaife. Just how much money the think tank receives from companies, foundations, and individuals linked to the fossil fuel industry remains unclear because Heartland does not publish the names of its donors, claiming the information would distract from the "merits of our positions." Indeed, leaked internal documents revealed that one of Heartland's largest donors is anonymous—a shadowy individual who has given more than \$8.6 million specifically to support the think tank's attacks on climate science.<sup>32</sup>

Meanwhile, scientists who present at Heartland climate conferences are almost all so steeped in fossil fuel dollars that you can practically smell the fumes. To cite just two examples, the Cato Institute's Patrick Michaels, who gave the 2011 conference keynote, once told CNN that 40 percent of his consulting company's income comes from oil companies (Cato itself has received funding from ExxonMobil and Koch family foundations). A Greenpeace investigation into another conference speaker, astrophysicist Willie Soon, found that between 2002 and 2010, 100 percent of his new research grants had come from fossil fuel interests.<sup>33</sup>

The people paid to amplify the views of these scientists—in blogs, op-eds, and television appearances—are bankrolled by many of the same sources. Money from big oil funds the Committee for a Constructive Tomorrow, which houses Marc Morano's website, just as it funds the Competitive Enterprise Institute, one of Chris Horner's intellectual homes. A February 2013 report in *The Guardian* revealed that between 2002 and 2010, a network of anonymous U.S. billionaires had donated nearly \$120 million to "groups casting doubt about the science behind climate change . . . the ready stream of cash set off a conservative backlash against Barack Obama's environmental agenda that wrecked any chance of Congress taking action on climate change."<sup>34</sup>

There is no way of knowing exactly how this money shapes the views of those who receive it or whether it does at all. We do know that having a significant economic stake in the fossil fuel economy makes one more prone to deny the reality of climate change, regardless of political affiliation. For example, the only parts of the U.S. where opinions about climate change are slightly less split along political lines are regions that are highly dependent on fossil fuel extraction—such as Appalachian coal country and the Gulf Coast. There, Republicans still overwhelmingly deny climate change, as they do across the country, but many of their Democratic neighbors do as well (in parts of Appalachia, just 49 percent of Democrats believe in human-created climate change, compared with 72-77 percent in other parts of the country). Canada has the same kinds of regional splits: in Alberta, where incomes are soaring thanks to the tar sands, only 41 percent of residents told pollsters that humans are contributing to climate change. In Atlantic Canada, which has seen far less extravagant benefits from fossil fuel extraction, 68 percent of respondents say that humans are warming the planet.<sup>35</sup>

A similar bias can be observed among scientists. While 97 percent of active climate scientists believe humans are a major cause of climate change, the numbers are radically different among "economic geologists"—scientists who study natural formations so that they can be commercially exploited by the extractive industries. Only 47 percent of these scientists believe in human-caused climate change. The bottom line is that we are all inclined to denial when the truth is too costly—whether emotionally, intellectually, or financially. As Upton Sinclair famously observed: "It is difficult to get a man to understand something, when his salary depends upon his not understanding it!"<sup>36</sup>

### **Plan B: Get Rich off a Warming World**

One of the most interesting findings of the many recent studies on climate perceptions is the clear connection between a refusal to accept the science of climate change and social and economic privilege. Overwhelmingly, climate change deniers are not only conservative but also white and male, a group with higher than average incomes. And they are more likely than other adults to be highly confident in their views, no matter how demonstrably false. A much

discussed paper on this topic by sociologists Aaron McCright and Riley Dunlap '(memorably titled "Cool Dudes") found that as a group, conservative white men who expressed strong confidence in their understanding of global warming were almost six times as likely to believe climate change "will never happen" as the rest of the adults surveyed. McCright and Dunlap offer a simple explanation for this discrepancy: "Conservative white males have disproportionately occupied positions of power within our economic system. Given the expansive challenge that climate change poses to the industrial capitalist economic system, it should not be surprising that conservative white males' strong system-justifying attitudes would be triggered to deny climate change."<sup>37</sup>

But deniers' relative economic and social privilege doesn't just give them more to lose from deep social and economic change; it gives them reason to be more sanguine about the risks of climate change should their contrarian views turn out to be false. This occurred to me as I listened to yet another speaker at the Heartland conference display what can only be described as an utter absence of empathy for the victims of climate change. Larry Bell (the space architect) drew plenty of laughs when he told the crowd that a little heat isn't so bad: "I moved to Houston intentionally!" (Houston was, at that time, in the midst of what would turn out to be Texas's worst single-year drought on record.) Australian geologist Bob Carter offered that "the world actually does better from our human perspective in warmer times." And Patrick Michaels said people worried about climate change should do what the French did after the devastating 2003 heat wave across Europe killed nearly fifteen thousand people in France alone: "they discovered Walmart and air-conditioning."<sup>38</sup>

I listened to these zingers as an estimated thirteen million people in the Horn of Africa faced starvation on parched land. What makes this callousness among deniers possible is their firm belief that if they're wrong about climate science, a few degrees of warming isn't something wealthy people in industrialized countries have to worry much about. (Much of this confidence is based on fantasy. Though the ultra-rich may be able to buy a measure of protection for a while, even the wealthiest nation on the planet can fall apart in the face of a major shock as Hurricane Katrina showed. And no society, no matter how well financed or managed, can truly adapt to massive natural disasters when one comes fast and furious on the heels of the last). ("When it rains, we find shelter. When it's hot, we find shade," Texas congressman Joe Barton explained at an energy and environment subcommittee hearing.)<sup>39</sup>

As for everyone else, well, they should stop looking for handouts and get busy making money. (Never mind that the World Bank warned in a 2012 report that for poor countries, the increased cost of storms, droughts, and flooding is already so high that it "threatens to roll back decades of sustain-able development.") When I asked Patrick Michaels whether rich countries have a responsibility to help poor ones pay for costly adaptations to a warmer climate, he scoffed: There is no reason to give resources to countries "because, for some reason, their political system is incapable of adapting." The real solution, he claimed, was more free trade.<sup>40</sup>

Michaels surely knows that free trade is hardly going to help islanders whose countries are disappearing, just as he is doubtlessly aware that most people on the planet who are hit hardest by heat and drought can't solve their problems by putting a new AC system on their credit cards. And this is where the intersection between extreme ideology and climate denial gets truly dangerous. It's not simply that these "cool dudes" deny climate science because it threatens to upend their dominance-based worldview. It is that their dominance-based worldview provides them with the intellectual tools to write off huge swaths of humanity, and indeed, to rationalize profiting from the meltdown.

Recognizing the threat posed by this empathy-exterminating mind-set—which the cultural theorists describe as "hierarchical" and "individualistic"—is a matter of great urgency because climate change will test our moral character like little before. The U.S. Chamber of Commerce, in its bid to prevent the Environmental Protection Agency from regulating carbon emissions,

argued in a petition that in the event of global warming, "populations can acclimatize to warmer climates via a range of behavioral, physiological, and technological adaptations."<sup>41</sup>

It is these adaptations that worry me most of all. Unless our culture goes through some sort of fundamental shift in its governing values, how do we honestly think we will "adapt" to the people made homeless and jobless by increasingly intense and frequent natural disasters? How will we treat the climate refugees who arrive on our shores in leaky boats? How will we cope as freshwater and food become ever more scarce?

We know the answers because the process is already under way. The corporate quest for natural resources will become more rapacious, more violent. Arable land in Africa will continue to be seized to provide food and fuel to wealthier nations, unleashing a new stage of neocolonial plunder layered on top of the most plundered places on earth (as journalist Christian Parenti documents so well in *Tropic of Chaos*). When heat stress and vicious storms wipe out small farms and fishing villages, the land will be handed over to large developers for mega-ports, luxury resorts, and industrial farms. Once self-sufficient rural residents will lose their lands and be urged to move into increasingly crowded urban slums—for their own protection, they will be told. Drought and famine will continue to be used as pretexts to push genetically modified seeds, driving farmers further into debt.<sup>42</sup>

In the wealthier nations, we will protect our major cities with costly seawalls and storm barriers while leaving vast areas of coastline that are inhabited by poor and Indigenous people to the ravages of storms and rising seas. We may well do the same on the planetary scale, deploying techno-fixes to lower global temperatures that will pose far greater risks to those living in the tropics than in the Global North (more on this later). And rather than recognizing that we owe a debt to migrants forced to flee their lands as a result of our actions (and inactions), our governments will build ever more high-tech fortresses and adopt even more draconian anti-immigration laws. And, in the name of "national security," we will intervene in foreign conflicts over water, oil, and arable land, or start those conflicts ourselves. In short our culture will do what it is already doing, only with more brutality and barbarism, because that is what our system is built to do.

In recent years, quite a number of major multinational corporations have begun to speak openly about how climate change might impact their businesses, and insurance companies closely track and discuss the increased frequency of major disasters. The CEO of Swiss Re Americas admitted, for instance, that "What keeps us up at night is climate change," while companies like Starbucks and Chipotle have raised the alarm about how extreme weather may impact the availability of key ingredients. In June 2014, the Risky Business project, led by billionaire and former New York City mayor Michael Bloomberg, as well as former U.S. treasury secretary Henry Paulson and hedge fund founder and environmental philanthropist Torn Steyer, warned that climate change would cost the U.S. economy billions of dollars each year as a result of rising sea levels alone, and that the corporate world must take such climate costs seriously.<sup>43</sup>

This kind of talk is often equated with support for strong action to prevent warming. It shouldn't be. Just because companies are willing to acknowledge the probable effects of climate change does not mean they support the kinds of aggressive measures that would significantly reduce those risks by keeping warming below 2 degrees. In the U.S., for instance, the insurance lobby has been, by far, the corporate sector most vocal about the mounting impacts, with the largest companies employing teams of climate scientists to help them prepare for the disasters to come. And yet the industry hasn't done much to push more aggressive climate policy—on the contrary, many companies and trade groups have provided substantial funding to the think tanks that created the climate change denial movement.<sup>44</sup> For some time, this seemingly contradictory dynamic played out within different divisions of the Heartland Institute itself. The world's premier climate denial institution houses something called the Center on Finance, Insurance, and Real Estate. Up until May 2012, it was pretty much a mouthpiece for the

insurance industry, headed by conservative Washington insider Eli Lehrer. What made Lehrer different from his Heartland colleagues, however, is that he is willing to state matter-of-factly, "Climate change is obviously real and obviously caused to a significant extent by people. I don't really think there's room for serious debate on either of those points."<sup>45</sup>

So even as his Heartland colleagues were organizing global conferences designed specifically to manufacture the illusion of a serious scientific debate, Lehrer's division was working with the insurance lobby to protect their bottom lines in a future of climate chaos. According to Lehrer, "In general there was no enormous conflict, day-to-day" between his work and that of his climate-change-denying colleagues.<sup>46</sup> That's because what many of the insurance companies wanted from Heartland's advocacy was not action to prevent climate chaos but rather policies that would safeguard or even increase their profits no matter the weather. That means pushing government out of the subsidized insurance business, giving companies greater freedom to raise rates and deductibles and to drop customers in high-risk areas, as well as other "free market" measures.

Eventually, Lehrer split away from the Heartland Institute after the think tank launched its billboard comparing people who believe in climate change to mass murderers. Since climate change believers include the insurance companies that were generously funding the Heartland Institute, that stunt didn't sit at all well. Still, in an interview, Eli Lehrer was quick to stress that the differences were over public relations, not policy. "The public policies that Heartland supported are generally ones I still favor," he said.<sup>47</sup> In truth the work was more or less compatible. Heartland's denier division did its best to cast so much doubt on the science that it helped to paralyze all serious attempts to regulate greenhouse emissions, while the insurance arm pushed policies that would allow corporations to stay profitable regardless of the real-world results of those emissions.

And this points to what really lies behind the casual attitude about climate change, whether it is being expressed as disaster denialism or disaster capitalism. Those involved feel free to engage in these high-stakes gambles because they believe that they and theirs will be protected from the ravages in question, at least for another generation or so.

On a large scale, many regional climate models do predict that wealthy countries—most of which are located at higher latitudes—may experience some economic benefits from a slightly warmer climate, from longer growing seasons to access to shorter trade routes through the melting Arctic ice. At the same time, the wealthy in these regions are already finding ever more elaborate ways to protect themselves from the coming weather extremes. Sparked by events like Superstorm Sandy, new luxury real estate developments are marketing their gold-plated private disaster infrastructure to would-be residents—everything from emergency lighting to natural-gas-powered pumps and generators to thirteen-foot floodgates and watertight rooms sealed "submarine-style," in the case of a new Manhattan condominium. As Stephen G. Kliegerman, the executive director of development marketing for Halstead Property, told *The New York Times*: "I think buyers would happily pay to be relatively reassured they wouldn't be terribly inconvenienced in case of a natural disaster."<sup>48</sup>

Many large corporations, meanwhile, have their own backup generators to keep their lights on through mass blackouts (as Goldman Sachs did during Sandy, despite the fact that its power never actually went out); the capacity to fortify themselves with their own sandbags (which Goldman also did ahead of Sandy); and their own special teams of meteorologists (FedEx). Insurance companies in the United States have even begun dispatching teams of private firefighters to their high-end customers when their mansions in California and Colorado are threatened by wildfires, a "concierge" service pioneered by AIG.<sup>49</sup>

Meanwhile, the public sector continues to crumble, thanks in large part to the hard work of the warriors here at the Heartland conference. These, after all, are the fervent dismantlers of the state, whose ideology has eroded so many parts of the public sphere, including disaster preparedness. These are the voices that have been happy to pass on the federal budget crisis

to the states and municipalities, which in turn are coping with it by not repairing bridges or replacing fire trucks. The "freedom" agenda that they are desperately trying to protect from scientific evidence is one of the reasons that societies will be distinctly less prepared for disasters when they come.

For a long time, environmentalists spoke of climate change as a great equalizer, the one issue that affected everyone, rich or poor. It was supposed to bring us together. Yet all signs are that it is doing precisely the opposite, stratifying us further into a society of haves and have-nots, divided between those whose wealth offers them a not insignificant measure of protection from ferocious weather, at least for now, and those left to the mercy of increasingly dysfunctional states.

### **The Meaner Side of Denial**

As the effects of climate change become impossible to ignore, the crueler side of the denial project—now lurking as subtext—will become explicit. It has already begun. At the end of August 2011, with large parts of the world still suffering under record high temperatures, the conservative blogger Jim Geraghty published a piece in *The Philadelphia Inquirer* arguing that climate change "will help the U.S. economy in several ways and enhance, not diminish, the United States' geopolitical power." He explained that since climate change will be hardest on developing countries, "many potentially threatening states will find themselves in much more dire circumstances." And this, he stressed, was a good thing: "Rather than our doom, climate change could be the centerpiece of ensuring a second consecutive American Century." Got that? Since people who scare Americans are unlucky enough to live in poor, hot places, climate change will cook them, leaving the United States to rise like a phoenix from the flames of global warming.<sup>50</sup> (In early 2011, Joe Read, a newly elected representative to the Montana state legislature, made history by introducing the first bill to officially declare climate change a good thing. "Global warming is beneficial to the welfare and business climate of Montana," the bill stated. Read explained, "Even if it does get warmer, we're going to have a longer growing season. It could be very beneficial to the state of Montana. Why are we going to stop this progress?" The bill did not pass).

Expect more of this monstrousness. As the world warms, the ideology so threatened by climate science—the one that tells us it's everyone for themselves, that victims deserve their fate, that we can master nature—will take us to a very cold place indeed. And it will only get colder, as theories of racial superiority, barely under the surface in parts of the denial movement, make a raging comeback.<sup>51</sup> (In a telling development, the American Freedom Alliance hosted its own conference challenging the reality of climate change in Los Angeles in June 2011. Part of the Alliance's stated mission is "to identify threats to Western civilization," and it is known for its fearmongering about "the Islamic penetration of Europe" and similar supposed designs in the U.S. Meanwhile, one of the books on sale at the Heartland conference was *Going Green* by Chris Skates, a fictional "thriller" in which climate activists plot with Islamic terrorists to destroy America's electricity grid).

(In the grossly unequal world this ideology has done so much to intensify and lock in, these theories are not optional: they are necessary to justify the hardening of hearts to the largely blameless victims of climate change in the Global South and to the predominantly African American cities like New Orleans that are most vulnerable in the Global North.

In a 2007 report on the security implications of climate change, copublished by the Center for Strategic and International Studies, former CIA director R. James Woolsey predicted that on a much warmer planet "altruism and generosity would likely be blunted."<sup>52</sup> We can already see that emotional blunting on display from Arizona to Italy. Already, climate change is changing us, coarsening us. Each massive disaster seems to inspire less horror, fewer telethons. Media

commentators speak of "compassion fatigue," as if empathy, and not fossil fuels, was the finite resource.

As if to prove the point, after Hurricane Sandy devastated large parts of New York and New Jersey, the Koch-backed organization Americans for Prosperity (AFP) launched a campaign to block the federal aid package going to these states. "We need to suck it up and be responsible for taking care of ourselves," said Steve Lonagan, then director of AFP's New Jersey chapter.<sup>53</sup>

And then there is Britain's *Daily Mail* newspaper. In the midst of the extraordinary 2014 winter floods, the tabloid ran a front-page headline asking its readers to sign a petition calling on the government "to divert some of the £11 billion a year spent on overseas aid to ease the suffering of British flood victims."<sup>54</sup> Within days, more than 200,000 people had signed onto the demand to cut foreign aid in favor of local disaster relief. Of course Britain—the nation that invented the coal-fired steam engine—has been emitting industrial levels of carbon for longer than any nation on earth and therefore bears a particularly great responsibility to increase, as opposed to claw back, foreign aid. But never mind that. Screw the poor. Suck it up. Everyone for themselves.

Unless we radically change course, these are the values that will rule our stormy future, even more than they already rule our present.

### **Coddling Conservatives**

Some climate activists have attempted to sway deniers away from their hardened positions, arguing that delaying climate action will only make the government interventions required more extreme. The popular climate blogger Joe Romm, for instance, writes that "if you hate government intrusion into people's lives, you'd better stop catastrophic global warming, because nothing drives a country more towards activist government than scarcity and deprivation. . . . Only Big Government—which conservatives say they don't want—can relocate millions of citizens, build massive levees, ration crucial resources like water and arable land, mandate harsh and rapid reductions in certain kinds of energy—all of which will be inevitable if we don't act now."<sup>55</sup>

It's true that catastrophic climate change would inflate the role of government to levels that would likely disturb most thinking people, whether left or right. And there are legitimate fears too of what some call "green fascism"—an environmental-crisis so severe that it becomes the pretext for authoritarian forces to seize control in the name of restoring some kind of climate order. But it's also the case that there is no way to get cuts in emissions steep or rapid enough to avoid those catastrophic scenarios *without* levels of government intervention that will never be acceptable to right-wing ideologues.

This was not always so. If governments, including in the U.S., had started cutting emissions back when the scientific consensus first solidified, the measures for avoiding catastrophic warming would not have been nearly so jarring to the reigning economic model. For instance, the first major international gathering to set specific targets for emission reductions was the World Conference on the Changing Atmosphere, held in Toronto in 1988, with more than three hundred scientists and policymakers from forty-six countries represented. The conference, which set the groundwork for the Rio Earth Summit, was a breakthrough, recommending that governments cut emissions by 20 percent below 1988 levels by 2005. "If we choose to take on this challenge," remarked one scientist in attendance, "it appears that we can slow the rate of change substantially, giving us time to develop mechanisms so that the cost to society and the damage to ecosystems can be minimized. We could alternatively close our eyes, hope for the best, and pay the cost when the bill comes due."<sup>56</sup>

If we had heeded this advice and got serious about meeting that goal immediately after the 1992 signing of the U.N. climate convention in Rio, the world would have needed to reduce its carbon emissions by about 2 percent per year until 2005.<sup>57</sup> At that rate, wealthy countries could

have much more comfortably started rolling out the technologies to replace fossil fuels, cutting carbon at home while helping to launch an ambitious green transition, throughout the world. Since this was before the globalization juggernaut took hold, it would have created an opportunity for China and India and other fast-growing economies to battle poverty on low-carbon pathways. (Which was the stated goal of "sustainable development" as championed in Rio.)

Indeed this vision could have been built into the global trade architecture that would rise up in the early to mid-1990s. If we had continued to reduce our emissions at that pace we would have been on track for a completely de-carbonized global economy by mid-century.

But we didn't do any of those things. And as the famed climate scientist Michael Mann, director of the Penn State Earth System Science Center, puts it, "There's a huge procrastination penalty when it comes to emitting carbon into the atmosphere": the longer we wait, the more it builds up, the more dramatically we must change to reduce the risks of catastrophic warming. Kevin Anderson, deputy director of the Tyndall Centre for Climate Change Research, further explains: "Perhaps at the time of the 1992 Earth Summit, or even at the turn of the millennium, 2°C levels of mitigation could have been achieved through significant evolutionary changes within the political and economic hegemony. But climate change is a cumulative issue! Now, in 2013, we in high-emitting (post)industrial nations face a very different prospect. Our ongoing and collective carbon profligacy has squandered any opportunity for the 'evolutionary change' afforded by our earlier (and larger) 2°C carbon budget. Today, after two decades of bluff and lies, the remaining 2°C budget demands revolutionary change to the political and economic hegemony."<sup>58</sup>

Put a little more simply: for more than two decades, we kicked the can down the road. During that time, we also expanded the road from a two-lane carbon-spewing highway to a six-lane superhighway. That feat was accomplished in large part thanks to the radical and aggressive vision that called for the creation of a single global economy based on the rules of free market fundamentalism, the very rules incubated in the right-wing think tanks now at the forefront of climate change denial. There is a certain irony at work: it is the success of their own revolution that makes revolutionary levels of transformation to the market system now our best hope of avoiding climate chaos.

Some are advancing a different strategy to bring right-wingers back into the climate fold. Rather than trying to scare them with scenarios of interventionist governments if we procrastinate further, this camp argues that we need approaches to emission reduction that are less offensive to conservative values.

Yale's Dan Kahan points out that while those who poll as highly "hierarchical" and "individualist" bridle at any mention of regulation, they tend to like big, centralized technologies that do not challenge their belief that humans can dominate nature. In one of his studies, Kahan and his colleagues polled subjects on their views about climate change after showing some of them fake news stories. Some of the subjects were given a story about how global warming could be solved through "anti-pollution" measures. Others were given a story that held up nuclear power as the solution. Some were shown no story at all. The scientific facts about global warming were identical in all news stories. The researchers discovered that hard-core conservatives who received the nuclear solution story were more open to the scientific facts proving that humans are changing the climate. However, those who received the story about fighting pollution "were even more skeptical about these facts than were hierarchs and individualists in a control group that received no newspaper story."<sup>59</sup>

It's not hard to figure out why. Nuclear is a heavy industrial technology, based on extraction, run in a corporatist manner, with long ties to the military-industrial complex. And as renowned

psychiatrist and author Robert Jay Lifton has noted, no technology does more to confirm the notion that man has tamed nature than the ability to split the atom.<sup>60</sup>

Based on this research, Kahan and others argue, environmentalists should sell climate action by playing up concerns about national security and emphasizing responses such as nuclear power and "geoengineering"— global-scale technological interventions that would attempt to reverse rapid warming by, for instance, blocking a portion of the sun's rays, or by "fertilizing" the oceans so that they trap more carbon, among other untested, extraordinarily high-risk schemes. Kahan reasons that since climate change is perceived by many on the right as a gateway to dreaded anti-industry policies, the solution is "to remove what makes it threatening." In a similar vein, Irina Feygina and John T. Jost, who have conducted parallel research at NYU, advise policymakers to package environmental action as being about protecting "our way of life" and a form of patriotism, something they revealingly call "system-sanctioned change."<sup>61</sup>

This kind of advice has been enormously influential. For instance, the Breakthrough Institute—a think tank that specialized in attacking grassroots environmentalism for its supposed lack of "modernity"—is forever charting this self-styled middle path, pushing nuclear power, fracked natural gas, and genetically modified crops as climate solutions, while attacking renewable energy programs. And as we will see later on, some greens are even warming up to geoengineering.<sup>62</sup> Moreover, in the name of reaching across the aisle, green groups are constantly "reframing" climate action so that it is about pretty much anything other than preventing catastrophic warming to protect life on earth. Instead climate action is about all the things conservatives are supposed to care about more than that, from cutting off revenues to Arab states to reasserting American economic dominance over China.

The first problem with this strategy is that it doesn't work: this has been the core messaging for many large U.S. green groups for five years ("Forget about climate change," counsels Jonathan Foley, director of the Institute on the Environment at the University of Minnesota. "Do you love America?"<sup>63</sup>) And as we have seen, conservative opposition to climate action has only hardened in this period.

The far more troubling problem with this approach is that rather than challenging the warped values fueling both disaster denialism and disaster capitalism, it actively reinforces those values. Nuclear power and geoengineering are not solutions to the ecological crisis; they are a doubling down on exactly the kind of reckless, short-term thinking that got us into this mess. Just as we spewed greenhouse gases into the atmosphere thinking that tomorrow would never come, both of these hugely high-risk technologies would create even more dangerous forms of waste, and neither has a discernible exit strategy (subjects that I will be exploring in greater depth later on). Hyper-patriotism, similarly, is an active barrier to coming up with any kind of global climate agreement, since it further pits countries against one another rather than encouraging them to cooperate. As for pitching climate action as a way to protect America's high-consumerist "way of life"—that is either dishonest or delusional because a way of life based on the promise of infinite growth cannot be protected, least of all exported to every corner of the globe.

### **The Battle of Worldviews**

I am well aware that all of this raises the question of whether I am doing the same thing as the deniers—rejecting possible solutions because they threaten my ideological worldview. As I outlined earlier, I have long been greatly concerned about the science of global warming—but I was propelled into a deeper engagement with it partly because I realized it could be a catalyst for forms of social and economic justice in which I already believed. But there are a few important differences to note. First, I am not asking anyone to take my word on the science; I think that all of us should take the word of 97 percent of climate scientists and their countless

peer-reviewed articles, as well as every national academy of science in the world, not to mention establishment institutions like the World Bank and the International Energy Agency, all of which are telling us we are headed toward catastrophic levels of warming. Nor am I suggesting that the kind of equity-based responses to climate change that I favor are inevitable results of the science.

What I am saying is that the science forces us to *choose* how we want to respond. If we stay on the road we are on, we will get the big corporate, big military, big engineering responses to climate change—the world of a tiny group of big corporate winners and armies of locked-out losers that we have imagined in virtually every fictional account of our dystopic future, from Mad Max to *The Children of Men* to *The Hunger Games* to *Elysium*. Or we can choose to heed climate change's planetary wake-up call and change course, steer away not just from the emissions cliff but from the logic that brought us careening to that precipice. Because what the "moderates" constantly trying to reframe climate action as something more palatable are really asking is: How can we create change so that the people responsible for the crisis do not feel threatened by the solutions? How, they ask, do you reassure members of a panicked, megalomaniacal elite that they are still masters of the universe, despite the overwhelming evidence to the contrary?

The answer is: you don't. You make sure you have enough people on your side to change the balance of power and take on those responsible, knowing that true populist movements always draw from both the left and the right. And rather than twisting yourself in knots trying to appease a lethal worldview, you set out to deliberately strengthen those values ("egalitarian" and "communitarian" as the cultural cognition studies cited here describe them) that are currently being vindicated, rather than refuted, by the laws of nature.

Culture, after all, is fluid. It has changed many times before and can change again. The delegates at the Heartland conference understand this, which is why they are so determined to suppress the mountain of evidence proving that their worldview is a threat to life on earth. The task for the rest of us is to believe, based on that same evidence, that a very different worldview can be our salvation.

The Heartlanders understand that culture can shift quickly because they are part of a movement that did just that. "Economics are the method," Margaret Thatcher said, "the object is to change the heart and soul." It was a mission largely accomplished. To cite just one example, in 1966, a survey of U.S. college freshmen found that only about 44 percent of them said that making a lot of money was "very important" or "essential." By 2013, the figure had jumped to 82 percent.<sup>64</sup>

It's enormously telling that as far back as 1998, when the American Geophysical Union (AGU) convened a series of focus groups designed to gauge attitudes toward global warming, it discovered that "Many respondents in our focus groups were convinced that the underlying cause of environmental problems (such as pollution and toxic waste) is a pervasive climate of rampant selfishness and greed, and since they see this moral deterioration to be irreversible, they feel that environmental problems are unsolvable."<sup>65</sup>

Moreover, a growing body of psychological and sociological research shows that the AGU respondents were exactly right: there is a direct and compelling relationship between the dominance of the values that are intimately tied to triumphant capitalism and the presence of anti-environment views and behaviors. While a great deal of research has demonstrated that having politically conservative or "hierarchical" views and a pro-industry slant makes one particularly likely to deny climate change, there is an even larger number of studies connecting materialistic values (and even free market ideology) to carelessness not just about climate change, but to a great many environmental risks. At Knox College in Illinois, psychologist Tim Kasser has been at the forefront of this work. "To the extent people prioritize values and goals such as achievement, money, power, status and image, they tend to hold more negative attitudes towards the environment, are less likely to engage in positive environmental behaviors,

and are more likely to use natural resources unsustainable" write Kasser and British environmental strategist Tom Crompton in their 2009 book, *Meeting Environmental Challenges: The Role of Human Identity*.<sup>66</sup>

In other words, the culture that triumphed in our corporate age pits us against the natural world. This could easily be a cause only for despair. But if there is a reason for social movements to exist, it is not to accept dominant values as fixed and unchangeable but to offer other ways to live—to wage, and win, a battle of cultural worldviews. That means laying out a vision of the world that competes directly with the one on harrowing display at the Heartland conference and in so many other parts of our culture, one that resonates with the majority of people on the planet because it is true: That we are not apart from nature but of it. That acting collectively for a greater good is not suspect, and that such common projects of mutual aid are responsible for our species' greatest accomplishments. That greed must be disciplined and tempered by both rule and example. That poverty amidst plenty is unconscionable.

It also means defending those parts of our societies that already express these values outside of capitalism, whether it's an embattled library, a public park, a student movement demanding free university tuition, or an immigrant rights movement fighting for dignity and more open borders. And most of all, it means continually drawing connections among these seemingly disparate struggles—asserting, for instance, that the logic that would cut pensions, food stamps, and health care before increasing taxes on the rich is the same logic that would blast the bedrock of the earth to get the last vapors of gas and the last drops of oil before making the shift to renewable energy.

Many are attempting to draw these connections and are expressing these alternative values in myriad ways. And yet a robust movement responding to the climate crisis is not emerging fast enough. Why? Why aren't we, as a species, rising to our historical moment? Why are we so far letting "decade zero" slip away?

It's rational for right-wing ideologues to deny climate change—to recognize it would be intellectually cataclysmic. But what is stopping so many who reject that ideology from demanding the kinds of powerful measures that the Heartlanders fear? Why aren't liberal and left political parties around the world calling for an end to extreme energy extraction and lull transitions to renewal and regeneration-based economies? Why isn't climate change at the center of the progressive agenda, the burning basis for demanding a robust and reinvented commons, rather than an often forgotten footnote? Why do liberal media outlets still segregate stories about melting ice sheets in their "green" sections—next to viral videos of cuddly animals making unlikely friendships? Why are so many of us not doing the things that must be done to keep warming below catastrophic levels?

The short answer is that the deniers won, at least the first round. Not the battle over climate science—their influence in that arena is already waning. But the deniers, and the ideological movement from which they sprang, won the battle over which values would govern our societies. Their vision—that greed should guide us, that, to quote the late economist Milton Friedman, "the major error" was "to believe that it is possible to do good with other people's money"—has dramatically remade our world over the last four decades, decimating virtually every countervailing power.<sup>67</sup> Extreme free-market ideology was locked in through the harsh policy conditions attached to much-needed loans issued by the World Bank and the International Monetary Fund. It shaped the model of export-led development that dotted the developing world with free trade zones. It was written into countless trade agreements. Not everyone was convinced by these arguments, not by a long shot. But too many tacitly accepted Thatcher's dictum that there is no alternative.

Meanwhile, denigration of collective action and veneration of the profit motive have infiltrated virtually every government on the planet, every major media organization, every university, our very souls. As that American Geophysical Union survey indicated, somewhere inside each of us dwells a belief in their central lie—that we are nothing but selfish, greedy, self-

gratification machines. And if we are that, then what hope do we have of taking on the grand, often difficult, collective work that will be required to save ourselves in time? This, without a doubt, is neoliberalism's single most damaging legacy: the realization of its bleak vision has isolated us enough from one another that it became possible to convince us that we are not just incapable of self-preservation but fundamentally *not worth saving*.

Yet at the same time, many of us know the mirror that has been held up to us is profoundly distorted—that we are, in fact, a mess of contradictions, with our desire for self-gratification coexisting with deep compassion, our greed with empathy and solidarity. And as Rebecca Solnit vividly documents in her 2009 book, *A Paradise Built in Hell*, it is precisely when humanitarian crises hit that these other, neglected values leap to the fore, whether it's the incredible displays of international generosity after a massive earthquake or tsunami, or the way New Yorkers gathered to spontaneously meet and comfort one another after the 9/11 attacks. Just as the Heartlanders fear, the existential crisis that is climate change has the power to release these suppressed values on a global and sustained scale, to provide us with a chance for a mass jailbreak from the house that their ideology built—a structure already showing significant cracks and fissures.<sup>68</sup>

But before that can happen, we need to take a much closer look at precisely how the legacy of market fundamentalism, and the much deeper cultural narratives on which it rests, still block critical, life-saving climate action on virtually every front. The green movement's mantra that climate is not about left and right but "right and wrong" has gotten us nowhere. The traditional political left does not hold all the answers to this crisis. But: there can be no question that the contemporary political right, and the triumphant ideology it represents, is a formidable barrier to progress.

As the next four chapters will show, the real reason we are failing to rise to the climate moment is because the actions required directly challenge our reigning economic paradigm (deregulated capitalism combined with public austerity), the stories on which Western cultures are founded (that we stand apart from nature and can outsmart its limits), as well as many of the activities that form our identities and define our communities (shopping, living virtually, shopping some more). They also spell extinction for the richest and most powerful industry the world has ever known—the oil and gas industry, which cannot survive in anything like its current form if we humans are to avoid our own extinction. In short, we have not responded to this challenge because we are locked in—politically, physically, and culturally. Only when we identify these chains do we have a chance of breaking free.

## Chapter 2

### Hot Money: How Free Market Fundamentalism Helped Overheat the Planet

*"We always had hope that next year was gonna be better. And even this year was gonna be better. We learned slowly, and what didn't work, you tried it harder the next time. You didn't try something different. You just tried harder, the same thing that didn't work."*

-Wayne Lewis, Dust Bowl survivor, 2012<sup>1</sup>

*"As leaders we have a responsibility to fully articulate the risks our people face. If the politics are not favorable to speaking truthfully, then clearly we must devote more energy to changing the politics."*

-Marlene Moses, Ambassador to the United Nations for Nauru, 2012<sup>2</sup>

During the globalization wars of the late nineties and early 2000s, I used to follow international trade law extremely closely. But I admit that as I immersed myself in the science and politics of climate change, I stopped paying attention to trade. I told myself that there was only so much abstract, bureaucratic jargon one person could be expected to absorb, and my quota was filled up with emission mitigation targets, feed-in tariffs, and the United Nations' alphabet soup of UNFCCs and IPCCs.

Then about three years ago, I started to notice that green energy programs—the strong ones that are needed to lower global emissions fast—were increasingly being challenged under international trade agreements, particularly the World Trade Organization's rules.

In 2010, for instance, the United States challenged one of China's wind power subsidy programs on the grounds that it contained supports for local industry considered protectionist. China, in turn, filed a complaint in 2012 targeting various renewable energy programs in the European Union, singling out Italy and Greece (it has also threatened to bring a dispute against renewables subsidies in five U.S. states). Washington, meanwhile, has launched a World Trade Organization attack on India's ambitious Jawaharlal Nehru National Solar Mission, a large, multiphase solar support program—once again, for containing provisions, designed to encourage local industry, considered to be protectionist. As a result, brand-new factories that should be producing solar panels are now contemplating closure. Not to be outdone, India has signaled that it might take aim at state renewable energy programs in the U.S.<sup>3</sup>

This is distinctly bizarre behavior to exhibit in the midst of a climate emergency. Especially because these same governments can be counted upon to angrily denounce each other at United Nations climate summits for not doing enough to cut emissions, blaming their own failures on the other's lack of commitment. Yet rather than compete for the best, most effective supports for green energy, the biggest emitters in the world are rushing to the WTO to knock down each other's windmills.

As one case piled on top of another, it seemed to me that it was time to delve back into the trade wars. And as I explored the issue further, I discovered that one of the key, precedent-setting cases pitting "free trade" against climate action was playing out in Ontario, Canada—my own backyard. Suddenly, trade law became a whole lot less abstract.

Sitting at the long conference table overlooking his factory floor, Paolo Maccario, an elegant Italian businessman who moved to Toronto to open a solar factory, has the proud, resigned air of a captain determined to go down with his ship. He makes an effort to put on a brave face: True, "the Ontario market is pretty much gone," but the company will find new customers for its

solar panels, he tells me, maybe in Europe, or the United States. Their products are good, best in class, and "the cost is competitive enough."<sup>4</sup> As chief operating officer of Silfab Ontario, Maccario has to say these things; anything else would be a breach of fiduciary duty. But he is also frank that the last few months have been almost absurdly bad. Old customers are convinced the factory is going to close down and won't be able to honor the twenty-five-year warranty on the solar panels they purchased. New customers aren't placing orders over the same concerns, opting to go with Chinese companies that are selling less efficient but cheaper modules (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). Suppliers who had been planning to set up their own factories nearby to cut down on transport costs are now keeping their distance.

Even his own board back home in Italy (Silfab is owned by Silfab SpA, whose founder was a pioneer in Italian photovoltaic manufacturing) seemed to be jumping ship. The parent company had committed to invest around \$7 million on a custom piece of machinery that, according to Maccario, would have created solar modules that "have an efficiency that has not been reached by any manufacturer in China and in the Western world." But at the last minute, and after all the research and design for the machinery was complete, "It was decided that we cannot spend the money to bring the technology here," Maccario explains. We put on hair nets and lab coats and he shows me an empty rectangle in the middle of the factory floor, the space set aside for equipment that is not coming.

What are the chances he would choose to open this factory here today, given all that has happened, I ask. At this, all attempts at PR drop away and he replies, "I would say below zero if such a number exists."

With his finely tailored wool suit and trim salt and pepper goatee, Maccario looks as if he should be sipping espresso in a piazza in Turin, working for Fiat perhaps—not stuck in this concrete box with an unopened yogurt on his desk, across the street from Imperial Chilled Juice and down the road from the ass end of an AMC multiplex.

And yet in 2010, the decision to locate the company's first North American solar manufacturing plant in Ontario seemed to make a great deal of sense. Back then the mood in Ontario's renewable sector was positively giddy. One year earlier, at the peak of the Wall Street financial crisis, the province had unveiled its climate action plan, the Green Energy and Green Economy Act, centered on a bold pledge to wean Canada's most populous province completely off coal by 2014.<sup>5</sup>

The plan was lauded by energy experts around the world, particularly in the U.S., where such ambition was lagging. On a visit to Toronto, Al Gore offered his highest blessing, proclaiming it "widely recognized now as the single best green energy [program] on the North American continent." And Michael T. Eckhart, then president of the American Council on Renewable Energy, described it as "the most comprehensive renewable energy policy entered anywhere around the world."<sup>6</sup>

The legislation created what is known as a feed-in tariff program, which allowed renewable energy providers to sell power back to the grid, offering long-term contracts with guaranteed premium prices. It also contained a variety of provisions to ensure that the developers weren't all big players but that local municipalities, co-ops, and Indigenous communities could all get into the renewable energy market and benefit from those premium rates. The catch was that in order for most of the energy providers to qualify, they had to ensure that a minimum percentage of their workforces and materials were local to Ontario. And the province set the bar high: solar energy developers had to source at least 40-60 percent of their content from within the province.<sup>7</sup>

The provision was an attempt to revive Ontario's moribund manufacturing sector, which had long been centered on the Big Three U.S. auto-makers (Chrysler, Ford, and General Motors)

and was, at that time, reeling from the near bankruptcy of General Motors and Chrysler. Compounding these challenges was the fact that Alberta's tar sands oil boom had sent the Canadian dollar soaring, making Ontario a much costlier place to build anything.<sup>8</sup>

In the years that followed the announcement, Ontario's efforts to get off coal were plagued by political blunders. Large natural gas and wind developers ran roughshod over local communities, while the government wasted hundreds of millions (at least) trying to clean up the unnecessary messes. Yet even with all these screwups, the core of the program was an undeniable success. By 2012, Ontario was the largest solar producer in Canada and by 2013, it had only one working coal-fired power plant left. The local content requirements—as the "buy local" and "hire local" provisions are called—were also proving to be a significant boost to the ailing manufacturing sector: by 2014, more than 31,000 jobs had been created and a wave of solar and wind manufacturers had set up shop.<sup>9</sup>

Silfab is a great example of how it worked. The Italian owners had already decided to open a solar panel plant in North America. The company had considered Mexico but was leaning toward the United States. The obvious choices, Maccario told me, were California, Hawaii, and Texas, all of which offered lots of sunshine and corporate incentives, as well as large and growing markets for their product. Ontario—overcast and cold a lot of the year—wasn't "on the radar screen," he admitted. That changed when the province introduced the green energy plan with its local-content provisions, which Maccario described as a "very gutsy and very well intended program." The provisions meant that in communities that switched to renewable energy, companies like his could count on a stable market for their products, one that was protected from having to compete head-to-head with cheaper solar panels from China. So Silfab chose Toronto for its first North American solar plant.

Ontario's politicians loved Silfab. It helped that the building the company purchased to produce its panels was an abandoned auto parts factory, then sitting idle like so many others. And many of the workers the company hired also came from the auto sector—men and women from Chrysler and the autoparts giant Magna, who had years of experience working with the kind of robotic arms that are used to assemble Silfab's high-tech panels. When the plant opened, Wayne Wright, a laid-off autoworker who landed a job as a production operator on the Silfab line, spoke movingly about his seventeen-year-old son, who told him that "finally" his dad's new job would be "creating a better future for all the younger kids."<sup>10</sup>

And then things started to go very wrong. Just as the U.S. has acted against local renewable supports in China and India, so Japan and then the European Union let it be known that they considered Ontario's local-content requirement to be a violation of World Trade Organization rules. Specifically, they claimed that the requirement that a fixed percentage of renewable energy equipment be made in Ontario would "discriminate against equipment for renewable energy generation facilities produced outside Ontario."<sup>11</sup>

The WTO ruled against Canada, determining that Ontario's buy-local provisions were indeed illegal. And the province wasted little time in nixing the local-content rules that had been so central to its program.<sup>12</sup> It was this, Maccario said, that led his foreign investors to pull their support for factory expansion. "Seeing all those, for lack of a better term, mixed messages . . . was the straw that broke the camel's back."

It was also why many plants like his could well close, and others have decided not to open in the first place.

### **Trade Trumps Climate**

From a climate perspective, the WTO ruling was an outrage: if there is to be any hope of meeting the agreed-upon 2 degree Celsius target, wealthy economies like Canada must make getting off fossil fuels their top priority. It is a moral duty, one that the federal government undertook when it signed the Kyoto Protocol in 1997. Ontario was putting real policies in place

to honor that commitment (unlike the Canadian government as a whole, which has allowed emissions to balloon, leading it to withdraw from the Kyoto Protocol rather than face international censure). Most importantly, the program was working. How absurd, then, for the WTO to interfere with that success—to let trade trump the planet itself.

And yet from a strictly legal standpoint, Japan and the EU were perfectly correct. One of the key provisions in almost all free trade agreements involves something called "national treatment," which requires governments to make no distinction between goods produced by local companies and goods produced by foreign firms outside their borders. Indeed, favoring local industry constitutes illegal "discrimination." This was a flashpoint in the free trade wars back in the 1990s, precisely because these restrictions effectively prevent governments from doing what Ontario was trying to do: create jobs by requiring the sourcing of local goods as a condition of government support. This was just one of the many fateful battles that progressives lost in those years.

Defenders of these trade deals argue that protections like Ontario's buy-local provisions distort the free market and should be eliminated. Some green energy entrepreneurs (usually those that purchase their products from China) have made similar arguments, insisting that it doesn't matter where solar panel and wind turbines are produced: the goal should be to get the cheapest products to the consumer so that the green transition can happen as quickly as possible.

The biggest problem with these arguments is the notion that there is any free market in energy to be protected from distortion. Not only do fossil fuel companies receive \$775 billion to \$1 trillion in annual global subsidies, but they pay nothing for the privilege of treating our shared atmosphere as a free waste dump—a fact that has been described by the *Stern Review on the Economics of Climate Change* as "the greatest market failure the world has ever seen." That freebie is the real distortion, that theft of the sky the real subsidy.<sup>13</sup>

In order to cope with these distortions (which the WTO has made no attempt to correct), governments need to take a range of aggressive steps—from price guarantees to straight subsidies—so that green energy has a fair shot at competing. We know from experience that this works: Denmark has among the most successful renewable energy programs in the world, with 40 percent of its electricity coming from renewables, mostly wind. But it's significant that the program was rolled out in the 1980s, before the free trade era began, when there was no one to argue with the Danish government's generous subsidies to the community-controlled energy projects putting up wind turbines (in 1980, new installations were subsidized by up to 30 percent).<sup>14</sup>

As Scott Sinclair of the Canadian Centre for Policy Alternatives has pointed out, "many of the policies Denmark used to launch its renewable energy industry would have been inconsistent with . . . international trade and investment agreements," since favoring "locally owned cooperatives would conflict with non-discrimination rules requiring that foreign companies be treated no less favourably than domestic suppliers."<sup>15</sup>

And Aaron Cosbey, a development economist and trade and climate expert who is generally supportive of the WTO, rightly notes that the promise of local job creation has been key to the political success of renewable energy programs. "In many cases the green jobs argument is the deciding factor that convinces governments to dole out support. And such requirements, if attached to subsidies or investment privileges, violate WTO obligations."<sup>16</sup>

Which is why governments adopting these tried-and-tested policies—of which there have been far too few—are the ones getting dragged into trade court, whether China, India, Ontario, or the European Union.

Worse, it's not only critical supports for renewable energy that are at risk of these attacks. Any attempt by a government to regulate the sale or extraction of particularly dirty kinds of fossil fuels is also vulnerable to similar trade challenges. The European Union, for instance, is considering new fuel quality standards that would effectively restrict the sales of oil derived from

such high-carbon sources as the Alberta tar sands. It's excellent climate policy, of the kind we need much more, but the effort has been slowed down by Canada's not so subtle threats of trade retaliation. Meanwhile, the European Union is using bilateral trade talks to try to circumvent longstanding U.S. restrictions on oil and gas exports, including a decades-old export ban on crude oil. In July 2014, a leaked negotiating document revealed that Europe is pushing for a "legally binding commitment" that would guarantee its ability to import fracked gas and oil from North Dakota's Bakken formation and elsewhere.<sup>17</sup>

Almost a decade ago, a WTO official claimed that the organization enables challenges against "almost any measure to reduce greenhouse gas emissions"—there was little public reaction at the time, but clearly there should have been. And the WTO is far from the only trade weapon that can be used in such battles—so too can countless bilateral and regional free trade and investment agreements.<sup>18</sup>

As we will see later on, these trade deals may even give multinationals the power to overturn landmark grassroots victories against highly controversial extractive activities like natural gas tracking: in 2012, an oil company began taking steps to use NAFTA to challenge Quebec's hard-won fracking moratorium, claiming it robbed the company of its right to drill for gas in the province.<sup>19</sup> (The case is ongoing.) As more activist victories are won, more such legal challenges should be expected.

In some of these cases, governments may successfully defend their emission-reducing activities in trade court. But in too many others, they can be relied upon to cave in early, not wanting to appear anti-free trade (which is likely what is behind Ontario's quiet acceptance of the WTO's ruling against its green energy plan). These challenges aren't killing renewable energy; in the U.S. and China, for instance, the solar market continues to grow impressively. But it is not happening fast enough. And the legal uncertainty that now surrounds some of the most significant green energy programs in the world is bogging us down at the very moment when science is telling us we need to leap ahead. To allow arcane trade law, which has been negotiated with scant public scrutiny, to have this kind of power over an issue so critical to humanity's future is a special kind of madness. As Nobel Prize-winning economist Joseph Stiglitz puts it, "Should you let a group of foolish lawyers, who put together something before they understood these issues, interfere with saving the planet?"<sup>20</sup>

Clearly not. Steven Shrybman, an international trade and public interest lawyer who has worked with a broad range of civil society groups to defend against these trade challenges, says that the problem is structural. "If the trade rules don't permit all kinds of important measures to deal with climate change—and they don't—then the trade rules obviously have to be rewritten. Because there is no way in the world that we can have a sustain-able economy and maintain international trade rules as they are. There's no way at all."<sup>21</sup>

This is exactly the sort of commonsense conclusion that has the Heart-landers so very scared of climate change. Because when people wake up to the fact that our governments have locked us into dozens of agreements that make important parts of a robust climate change response illegal, they will have an awfully powerful argument to oppose any such new deals until the small matter of our planet's habitability is satisfactorily resolved.

The same goes for all kinds of free market orthodoxies that threaten our capacity to respond boldly to this crisis, from the suffocating logic of austerity that prevents governments from making the necessary investments in low-carbon infrastructure (not to mention firefighting and flood response), to the auctioning off of electric utilities to private corporations that, in many cases, refuse to switch over to less profitable renewables.

Indeed the three policy pillars of the neoliberal age—privatization of the public sphere, deregulation of the corporate sector, and the lowering of income and corporate taxes, paid for with cuts to public spending—are each incompatible with many of the actions we must take to bring our emissions to safe levels. And together these pillars form an ideological wall that has blocked a serious response to climate change for decades. Before delving more deeply into the

ways the climate crisis calls for dismantling that, wall, it's helpful to look a little more closely at the epic case of bad timing that: landed us where we are today.

### **A Wall Comes Down, Emissions Go Up**

If the climate movement had a birthday, a moment when the issue pierced the public consciousness and could no longer be ignored, it would have to be June 23, 1988. Global warming had been on the political and scientific radar long before that, however. The basic insights central to our current understanding date back to the beginning of the second half of the nineteenth century, and the first scientific breakthroughs demonstrating that burning carbon could be warming the planet were made in the late 1950s. In 1965, the concept was so widely accepted among specialists that U.S. president Lyndon B. Johnson was given a report from his Science Advisory Committee warning that, "Through his worldwide industrial civilization, Man is unwittingly conducting a vast geophysical experiment. . . . The climatic changes that may be produced by the increased CO<sub>2</sub> content could be deleterious from the point of view of human beings."<sup>22</sup>

But it wasn't until James Hansen, then director of NASA's Goddard Institute for Space Studies, testified before a packed congressional hearing on June 23, 1988, that global warming became the stuff of chat shows and political speeches. With temperatures in Washington, D.C., a sweltering 98 degrees Fahrenheit (still a record for that day), and the building's air conditioning on the fritz, Hansen told a room filled with sweaty lawmakers that he had "99 percent confidence" in "a real warming trend" linked to human activity. In a comment to *The New York Times* he added that it was "time to stop waffling" about the science. Later that same month, hundreds of scientists and policymakers held the historic World Conference on the Changing Atmosphere in Toronto where the first emission reductions were discussed. The United Nations' Intergovernmental Panel on Climate Change (IPCC), the premier scientific body advising governments on the climate threat, held its first session that November. By the following year, 79 percent of Americans had heard of the greenhouse effect—a leap from just 38 percent in 1981.<sup>23</sup>

The issue was so prominent that when the editors of *Time* magazine announced their 1988 "Man of the Year," they went for an unconventional choice: "Planet of the Year: Endangered Earth," read the magazine's cover line, over an image of the globe held together with twine, the sun setting ominously in the background. "No single individual, no event, no movement captured imaginations or dominated headlines more," journalist Thomas Sancton explained, "than the clump of rock and soil and water and air that is our common home."<sup>24</sup>

More striking than the image was Sancton's accompanying essay. "This year the earth spoke, like God warning Noah of the deluge. Its message was loud and clear, and suddenly people began to listen, to ponder what portents the message held." That message was so profound, so fundamental, he argued, that it called into question the founding myths of modern Western culture. Here it is worth quoting Sancton at length as he described the roots of the crisis:

In many pagan societies, the earth was seen as a mother, a fertile giver of life. Nature—the soil, forest, sea—was endowed with divinity, and mortals were subordinate to it. The Judeo-Christian tradition introduced a radically different concept. The earth was the creation of a monotheistic God, who, after shaping it, ordered its inhabitants, in the words of Genesis: "Be fruitful and multiply, and replenish the earth and subdue it: and have dominion over the fish of the sea and over the fowl of the air and over every living thing that moveth upon the earth." The idea of dominion could be interpreted as an invitation to use nature as a convenience.<sup>25</sup>

The diagnosis wasn't original—indeed it was a synthesis of the founding principles of ecological thought. But to read these words in America's most studiously centrist magazine was nothing short of remarkable. For this reason and others, the start of 1989 felt to many in the environmental movement like a momentous juncture, as if the thawing of the Cold War and the warming of the planet were together helping to birth a new consciousness, one in which cooperation would triumph over domination, and humility before nature's complexity would challenge technological hubris.

As governments came together to debate responses to climate change, strong voices from developing countries spoke up, insisting that the core of the problem was the high-consumption lifestyle that dominated in the West. In a speech in 1989, for instance, India's President R. Venkataraman argued that the global environmental crisis was the result of developed countries' "excessive consumption of all materials and through large-scale industrialization intended to support their styles of life."<sup>26</sup> If wealthy countries consumed less, then everyone would be safer.

But if that was the way 1989 began, it would end very differently. In the months that followed, popular uprisings would spread across the Soviet-controlled Eastern Bloc, from Poland to Hungary and finally to East Germany where, in November 1989, the Berlin Wall collapsed. Under the banner "the End of History," right-wing ideologues in Washington seized on this moment of global flux to crush all political competition, whether socialism, Keynesianism, or deep ecology. They waged a frontal attack on political experimentation, on the idea that there might be viable ways of organizing societies other than deregulated capitalism.

Within a decade, all that would be left standing would be their own extreme, pro-corporate ideology. Not only would the Western consumer lifestyle survive intact, it would grow significantly more lavish, with U.S. credit card debt per household increasing fourfold between 1980 and 2010.<sup>27</sup> Simultaneously, that voracious lifestyle would be exported to the middle and upper classes in every corner of the globe—including, despite earlier protestations, India, where it would wreak environmental damage on a scale difficult to fathom. The victories in the new era would be faster and bigger than almost anyone predicted; and the armies of losers would be left to pick through the ever-growing mountains of methane-spewing waste.

### **Trade and Climate: Two Solitudes**

Throughout this period of rapid change, the climate and trade negotiations closely paralleled one another, each winning landmark agreements within, a couple of years of each other. In 1992, governments met for the first United Nations Earth Summit in Rio, where they signed the United Nations Framework Convention on Climate Change (UNFCCC), the document that formed the basis for all future climate negotiations. That same year, the North American Free Trade Agreement was signed, going into effect two years later. Also in 1994, negotiations establishing the World Trade Organization concluded, and the new global trade body made its debut the next year. In 1997, the Kyoto Protocol was adopted, containing the first binding emission reduction targets. In 2001, China gained full membership in the WTO, the culmination of a trade and investment liberalization process that had begun decades earlier.

What is most remarkable about these parallel processes—trade on the one hand, climate on the other—is the extent to which they functioned as two solitudes. Indeed, each seemed to actively pretend that the other did not exist, ignoring the most glaring questions about how one would impact the other. Like, for example: How would the vastly increased distances that basic goods would now travel—by carbon-spewing container ships and jumbo jets, as well as diesel trucks—impact the carbon emissions that the climate negotiations were aiming to reduce? How would the aggressive protections for technology patents enshrined under the WTO impact the demands being made by developing nations in the climate negotiations for free transfers of green technologies to help them develop on a low-carbon path? And perhaps most critically,

how would provisions that allowed private companies to sue national governments over laws that impinged on their profits dissuade governments from adopting tough antipollution regulations, for fear of getting sued?

These questions were not debated by government negotiators, nor was any attempt made to resolve their obvious contradictions. Not that there was ever any question about which side would win should any of the competing pledges to cut emissions and knock down commercial barriers ever come into direct conflict: the commitments made in the climate negotiations all effectively functioned on the honor system, with a weak and unthreatening mechanism to penalize countries that failed to keep their promises. The commitments made under trade agreements, however, were enforced by a dispute settlement system with real teeth, and failure to comply would land governments in trade court, often facing harsh penalties.

In fact, the hierarchy was so clear that the climate negotiators formally declared their subservience to the trading system from the start. When the U.N. climate agreement was signed at the Rio Earth Summit in 1992, it made clear that "measures taken to combat climate change, including unilateral ones, should not constitute ... a disguised restriction on international trade." (Similar language appears in the Kyoto Protocol.) As Australian political scientist Robyn Eckersley puts it, this was "the pivotal moment that set the shape of the relationship between the climate and trade regimes" because, "Rather than push for the recalibration of the international trade rules to conform with the requirements of climate protection ... the Parties to the climate regime have ensured that liberalized trade and an expanding global economy have been protected against trade-restrictive climate policies." This practically guaranteed that the negotiating process would be unable to reckon with the kinds of bold but "trade-restrictive" policy options that could have been coordinated internationally—from buy-local renewable energy programs to restrictions on trade in goods produced with particularly high carbon footprints.<sup>28</sup>

A few isolated voices were well aware that the modest gains being made in the negotiations over "sustainable development" were being actively unmade by the new trade and investment architecture. One of those voices belonged to Martin Khor, then director of the Third World Network, which has been a key advisor to developing country governments in both trade and climate talks. At the end of the 1992 Rio Earth Summit, Khor cautioned that there was a "general feeling among Southern country delegates . . . that events outside the [summit] process were threatening to weaken the South further and to endanger whatever positive elements exist in" the Rio agenda. The examples he cited were the austerity policies being pushed at the time by the World Bank and the International Monetary Fund, as well as the trade negotiations that would soon result in the creation of the WTO.<sup>29</sup>

Another early warning was sounded by Steven Shrybman, who observed a decade and a half ago that the global export of industrial agriculture had already dealt a devastating blow to any possible progress on emissions. In a paper published in 2000, Shrybman argued that "the globalization of agricultural systems over recent decades is likely to have been one of the most important causes of overall increases in greenhouse gas emissions."<sup>30</sup>

This had far less to do with current debates about the "food miles" associated with imported versus local produce than with the way in which the trade system, by granting companies like Monsanto and Cargill their regulatory wish list—from unfettered market access to aggressive patent protection to the maintenance of their rich subsidies—has helped to entrench and expand the energy-intensive, higher-emissions model of industrial agriculture around the world. This, in turn, is a major explanation for why the global food system now accounts for between 19 and 29 percent of world greenhouse gas emissions. "Trade policy and rules actually drive climate change in a very structural way in respect of food systems," Shrybman stressed in an interview.<sup>31</sup>

The habit of willfully erasing the climate crisis from trade agreements continues to this day: for instance, in early 2014, several negotiating documents for the proposed Trans-Pacific

Partnership, a controversial new NAFTA-style trade deal spanning twelve countries, were released to the public via WikiLeaks and the Peruvian human rights group RedGE. A draft of the environment chapter had contained language stating that countries "acknowledge climate change as a global concern that requires collective action and recognize the importance of implementation of their respective commitments under the United Nations Framework Convention on Climate Change (UNFCCC)." The language was vague and nonbinding, but at least it was a tool that governments could use to defend themselves should their climate policies be challenged in a trade tribunal, as Ontario's plan was. But a later document showed that U.S. negotiators had proposed an edit: take out all the stuff about climate change and UNFCCC commitments. In other words, while trade has repeatedly been allowed to trump climate, under no circumstances would climate be permitted to trump trade.<sup>32</sup>

Nor was it only the trade negotiators who blocked out the climate crisis as they negotiated agreements that would send emissions soaring and make many solutions to this problem illegal. The climate negotiations exhibited their own special form of denial. In the early and mid-1990s, while the first climate protocol was being drafted, these negotiators, along with the Intergovernmental Panel on Climate Change, hashed out the details of precisely how countries should measure and monitor how much carbon they were emitting—a necessary process since governments were on the verge of pledging their first round of emission reductions, which would need to be reported and monitored.

The emissions accounting system on which they settled was an odd relic of the pre—free trade era that took absolutely no account of the revolutionary changes unfolding right under their noses regarding how (and where) the world's goods were being manufactured. For instance, emissions from the transportation of goods across borders—all those container ships, whose traffic has increased by nearly 400 percent over the last twenty years—are not formally attributed to any nation-state and therefore no one country is responsible for reducing their polluting impact. (And there remains little momentum at the U.N. for changing that, despite the reality that shipping emissions are set to double or even triple by 2050.)<sup>33</sup>

And fatefully, countries are responsible only for the pollution they create inside their own borders—not for the pollution produced in the manufacturing of goods that are shipped to their shores; those are attributed to the countries where the goods were produced.<sup>34</sup> This means that the emissions that went into producing, say, the television in my living room, appear nowhere on Canada's emissions ledger, but rather are attributed entirely to China's ledger, because that is where the set was made. And the international emissions from the container ship that carried my TV across the ocean (and then sailed back again) aren't entered into anyone's account book.

This deeply flawed system has created a vastly distorted picture of the drivers of global emissions. It has allowed rapidly de-industrializing wealthy states to claim that their emissions have stabilized or even gone down when, in fact, the emissions embedded in their consumption have soared during the free trade era. For instance, in 2011, the *Proceedings of the National Academy of Sciences* published a study of the emissions from industrialized countries that signed the Kyoto Protocol. It found that while their emissions had stopped growing, that was partly because international trade had allowed these countries to move their dirty production overseas. The researchers concluded that the rise in emissions from goods produced in developing countries but consumed in industrialized ones was *six times* greater than the emissions savings of industrialized countries.<sup>35</sup>

### **Cheap Labor, Dirty Energy: A Package Deal**

As the free trade system was put in place and producing offshore became the rule, emissions did more than move—they multiplied. As mentioned earlier, before the neoliberal era, emissions growth had been slowing, from 4.5 percent annual increases in the 1960s to about 1

percent a year in the 1990s. But the new millennium was a watershed: between 2000 and 2008, the growth rate reached 3.4 percent a year, shooting past the highest IPCC projections of the day. In 2009, it dipped due to the financial crisis, but made up for lost time with the historic 5.9 percent increase in 2010 that left climate watchers reeling. (In mid-2014, two decades after the creation of the WTO, the IPCC finally acknowledged the reality of globalization and noted in its Fifth Assessment Report, "A growing share of total anthropogenic CO<sub>2</sub> emissions is released in the manufacture of products that are traded across international borders.")<sup>36</sup>

The reason for what Andreas Malm—a Swedish expert on the history of coal—describes as "the early 21st Century emissions explosion" is straightforward enough. When China became the "workshop of the world" it also became the coal-spewing "chimney of the world." By 2007, China was responsible for two thirds of the annual increase in global emissions. Some of that was the result of China's own internal development—bringing electricity to rural areas, and building roads. But a lot of it was directly tied to foreign trade: according to one study, between 2002 and 2008, 48 percent of China's total emissions was related to producing goods for export.<sup>37</sup>

"One of the reasons why we're in the climate crisis is because of this model of globalization," says Margrete Strand Rangnes, executive vice president at Public Citizen, a Washington-based policy institute that has been at the forefront of the fight against free trade. And that, she says, is a problem that requires "a pretty fundamental re-formation of our economy, if we're going to do this right."<sup>38</sup>

International trade deals were only one of the reasons that governments embraced this particular model of fast-and-dirty, export-led development, and every country had its own peculiarities. In many cases (though not China's), the conditions attached to loans from the International Monetary Fund and World Bank were a major factor, so was the economic orthodoxy imparted to elite students at schools like Harvard and the University of Chicago. All of these and other factors played a role in shaping what was (never ironically) referred to as the Washington Consensus. Underneath it all is the constant drive for endless economic growth, a drive that, as will be explored later on, goes much deeper than the trade history of the past few decades. But there is no question that the trade architecture and the economic ideology embedded within it played a central role in sending emissions into hyperdrive.

That's because one of the primary driving forces of the particular trade system designed in the 1980s and 1990s was always to allow multinationals the freedom to scour the globe in search of the cheapest and most exploitable labor force. It was a journey that passed through Mexico and Central America's sweatshop maquiladoras and had a long stopover in South Korea. But by the end of the 1990s, virtually all roads led to China, a country where wages were extraordinarily low, trade unions were brutally suppressed, and the state was willing to spend seemingly limitless funds on massive infrastructure projects—modern ports, sprawling highway systems, endless numbers of coal-fired power plants, massive dams—all to ensure that the lights stayed on in the factories and the goods made it from the assembly lines onto the container ships on time. A free trader's dream, in other words—and a climate nightmare.

A nightmare because there is a close correlation between low wages and high emissions, or as Malm puts it, "a causal link between the quest for cheap and disciplined labor power and rising CO<sub>2</sub> emissions." And why wouldn't there be? The same logic that is willing to work laborers to the bone for pennies a day will burn mountains of dirty coal while spending next to nothing on pollution controls because it's the cheapest way to produce. So when the factories moved to China, they also got markedly dirtier. As Malm points out, Chinese coal use was declining slightly between 1995 and 2000, only for the explosion in manufacturing to send it soaring once again. It's not that the companies moving their production to China wanted to drive up emissions: they were after the cheap labor, but exploited workers and an exploited planet are, it turns out, a package deal. A destabilized climate is the cost of deregulated, global capitalism, its unintended, yet unavoidable consequence.<sup>39</sup>

This connection between pollution and labor exploitation has been true since the earliest days of the Industrial Revolution. But in the past, when workers organized to demand better wages, and when, city dwellers organized to demand cleaner air, the companies were pretty much forced to improve both working and environmental standards. That changed with the advent of free trade: thanks to the removal of virtually all barriers to capital flows, corporations could pick up and leave every time labor costs started rising. That's why many large manufacturers left South Korea for China in the late 1990s, and it's why many are now leaving China, where wages are climbing, for Bangladesh, where they are significantly lower. So while our clothes, electronics, and furniture may be made in China, the economic model was primarily made in the U.S.A.

And yet when the subject of climate change comes up in discussion in wealthy, industrialized countries, the instant response, very often, is that it's all China's fault (and India's fault and Brazil's fault and so on). Why bother cutting our own emissions when everyone knows that the fast developing economies are the real problem, opening more coal plants every month than we could ever close?<sup>40</sup> This argument is made as if we in the West are mere spectators to this reckless and dirty model of economic growth. As if it was not our governments and our multinationals that pushed a model of export-led development that made all of this possible. It is said as if it were not our own corporations who, with single-minded determination (and with full participation from China's autocratic rulers), turned the Pearl River Delta into their carbon-spewing special economic zone, with the goods going straight onto container ships headed to our superstores. All in the name of feeding the god of economic growth (via the altar of hyper-consumption) in every country in the world.

The victims in all this are regular people: the workers who lose their factory jobs in Juarez and Windsor; the workers who get the factory jobs in Shenzhen and Dhaka, jobs that are by this point so degraded that some employers install nets along the perimeters of roofs to catch employees when they jump, or where safety codes are so lax that workers are killed in the hundreds when buildings collapse. The victims are also the toddlers mouthing lead-laden toys; the Walmart employee expected to work over the Thanksgiving holiday only to be trampled by a stampede of frenzied customers, while still not earning a living wage. And the Chinese villagers whose water is contaminated by one of those coal plants we use as our excuse for inaction, as well as the middle class of Beijing and Shanghai whose kids are forced to play inside because the air is so foul.<sup>41</sup>

### **A Movement Digs Its Own Grave**

The greatest tragedy of all is that so much of this was eminently avoidable. We knew about the climate crisis when the rules of the new trade system were being written. After all, NAFTA was signed just one year after governments, including the United States, signed the United Nations Framework Convention on Climate Change in Rio. And it was by no means inevitable that these deals would go through. A strong coalition of North American labor and environmental groups opposed NAFTA precisely because they knew it would drive down labor and environmental standards. For a time it even looked as if they would win.

Public opinion in all three countries was deeply divided, so much so that when Bill Clinton ran for president in 1992, he pledged that he would not sign NAFTA until it substantively reflected those concerns. In Canada, Jean Chretien campaigned for prime minister against the deal in the election of 1993, Once both were in office, however, the deal was left intact and two toothless side agreements were tacked on, one for labor and one for environmental standards. The labor movement knew better than to fall for this ploy and continued to forcefully oppose the deal, as did many Democrats in the U.S. But for a complex set of reasons that will be explored later, having to do with a combination of reflexive political centrism and the growing influence of corporate "partners" and donors, the leadership of many large environmental organizations

decided to play ball. "One by one, former NAFTA opponents and skeptics became enthusiastic supporters, and said so publicly," writes journalist Mark Dowie in his critical history of the U.S. environmental movement, *Losing Ground*. These Big Green groups even created their own pro-NAFTA organization, the Environmental Coalition for NAFTA—which included the National Wildlife Federation, the Environmental Defense Fund, Conservation International, the National Audubon Society, the Natural Resources Defense Council, and the World Wildlife Fund—which, according to Dowie provided its "unequivocal support to the agreement." Jay Hair, then head of the National Wildlife Federation, even flew to Mexico on an official U.S. trade mission to lobby his Mexican counterparts, while attacking his critics for "putting their protectionist polemics ahead of concern for the environment."<sup>42</sup>

Not everyone in the green movement hopped on the pro-trade bandwagon: Greenpeace, Friends of the Earth, and the Sierra Club, as well as many small organizations, continued to oppose NAFTA. But that didn't matter to the Clinton administration, which had what it wanted—the ability to tell a skeptical public that "groups representing 80 percent of national [environmental] group membership have endorsed NAFTA." And that was important, because Clinton faced an uphill battle getting NAFTA through Congress, with many in his own party pledging to vote against the deal. John Adams, then director of the Natural Resources Defense Council, succinctly described the extraordinarily helpful role played by groups like his: "We broke the back of the environmental opposition to NAFTA. After we established our position Clinton only had labor to fight. We did him a big favor."<sup>43</sup>

Indeed when the president signed NAFTA into law in 1993, he made a special point of thanking "the environmental people who came out and worked through this—many of them at great criticism, particularly in the environmental movement." Clinton also made it clear that this victory was about more than one agreement. "Today we have the chance to do what our parents did before us. We have the opportunity to remake the world." He explained that, "We are on the verge of a global economic expansion. . . . Already the confidence we've displayed by ratifying NAFTA has begun to bear fruit. We are now making real progress toward a worldwide trade agreement so significant that it could make the material gains of NAFTA for our country look small by comparison." He was referring to the World Trade Organization. And just in case anyone was still worried about the environmental consequences, Clinton offered his personal assurance. "We will seek new institutional arrangements to ensure that trade leaves the world cleaner than before."<sup>44</sup>

Standing by the president's side was his vice president, Al Gore, who had been largely responsible for getting so many Big Green groups on board. Given this history, it should hardly come as a surprise that the mainstream environmental movement has been in no rush to draw attention to the disastrous climate impacts of the free trade era. To do so would only highlight their own active role in helping the U.S. government to, in Clinton's words, "remake the world." Much better, as we will see later on, to talk about light bulbs and fuel efficiency.

The significance of the NAFTA signing was indeed historic, tragically so. Because if the environmental movement had not been so agreeable, NAFTA might have been blocked or renegotiated to set a different kind of precedent. A new trade architecture could have been built that did not actively sabotage the fragile global climate change consensus. Instead—as had been the promise and hope of the 1992 Rio Earth Summit—this new architecture could have been grounded in the need to fight poverty and reduce emissions at the same time. So for example, trade access to developing countries could have been tied to transfers of resources and green technology so that critical new electricity and transit infrastructure was low carbon from the outset. And the deals could have been written to ensure that any measures taken to support renewable energy would not be penalized and, in fact, could be rewarded. The global economy might not have grown as quickly as it did, but it also would not be headed rapidly off the climate cliff.

The errors of this period cannot be undone, but it is not too late for a new kind of climate movement to take up the fight against so-called free trade and build this needed architecture now. That doesn't—and never did—mean an end to economic exchange across borders. It does, however, mean a far more thoughtful and deliberate approach to why we trade and whom it serves. Encouraging the frenetic and indiscriminate consumption of essentially disposable products can no longer be the system's goal. Goods must once again be made to last, and the use of energy-intensive long-haul, transport will need to be rationed—reserved for those cases where goods cannot be produced locally or where local production is more carbon-intensive. (For example, growing food in greenhouses in cold parts of the United States is often more energy intensive than growing it in warmer regions and shipping it by light rail.)<sup>45</sup>

According to liana Solomon, trade analyst for the Sierra Club, this is not a fight that the climate movement can avoid. "In order to combat climate change, there's a real need to start localizing our economies again, and thinking about how and what we're purchasing and how it's produced. And the most basic rule of trade law is you can't privilege domestic over foreign. So how do you tackle the idea of needing to incentivize local economies, tying together local green jobs policies with clean energy policies, when that is just a no-go in trade policy?... If we don't think about how the economy is structured, then we're actually never going to the real root of the problem."<sup>46</sup>

These kinds of economic reforms would be good news—for unemployed workers, for farmers unable to compete with cheap imports, for communities that have seen their manufacturers move offshore and their local businesses replaced with big box stores. And all of these constituencies would be needed to fight for these policies, since they represent the reversal of the thirty-year trend of removing every possible limit on corporate power.

### **From Frenetic Expansion to Steady States**

Challenging free trade orthodoxy is a heavy lift in our political culture; anything that has been in place for that long takes on an air of inevitability. But, critical as these shifts are, they are not enough to lower emissions in time. To do that, we will need to confront a logic even more entrenched than free trade—the logic of 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.<sup>47</sup>

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."<sup>48</sup>

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.<sup>49</sup>

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.<sup>50</sup>

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."<sup>51</sup> (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).

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.<sup>52</sup>

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."<sup>53</sup>

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.<sup>54</sup>

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."<sup>55</sup>

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."<sup>56</sup>

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."<sup>57</sup>

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."<sup>58</sup>

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.<sup>59</sup> (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).

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."<sup>60</sup>

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."<sup>61</sup>

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

Policies like luxury taxes could be put in place to discourage wasteful consumption.<sup>62</sup> 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?"<sup>63</sup>

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.<sup>64</sup>

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."<sup>65</sup>

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.

## Chapter 5

### Beyond Extractivism: Confronting the Climate Denier Within

*"The best thing about the Earth is if you poke holes in it oil and gas comes out."*

-Republican U.S. Congressman Steve Stockman, 2013<sup>1</sup>

*"The open veins of Latin America are still bleeding."*

-Bolivian Indigenous leader Nilda Rojas Huanca, 2014<sup>2</sup>

*"It is our predicament that we live in a finite world, and yet we behave as if it were infinite. Steady exponential material growth with no limits on resource consumption and population is the dominant conceptual model used by today's decision makers. This is an approximation of reality that is no longer accurate and [has] started to break down."*

-Global systems analyst Rodrigo Castro and colleagues, paper presented at a scientific modeling conference, 2014<sup>3</sup>

For the past few years, the island of Nauru has been on a health kick. The concrete walls of public buildings are covered in murals urging regular exercise and healthy eating, and warning against the danger of diabetes. Young people are asking their grandparents how to fish, a lost skill. But there is a problem. As Nerida-Ann Steshia Hubert, who works at a diabetes center on the island, explains, life spans on Nauru are short, in part because of an epidemic of the disease. "The older folks are passing away early and we're losing a lot of the knowledge with them. It's like a race against time—trying to get the knowledge from them before they die."<sup>4</sup>

For decades, this tiny, isolated South Pacific island, just twenty-one square kilometers and home to ten thousand people, was held up as a model for the world—a developing country that was doing everything right. In the early 1960s, the Australian government, whose troops seized control of Nauru from the Germans in 1914, was so proud of its protectorate that it made promotional videos showing the Micronesians in starched white Bermuda shorts, obediently following lessons in English-speaking schools, settling their disputes in British-style courts, and shopping for modern conveniences in well-stocked grocery stores.<sup>5</sup>

During the 1970s and 1980s, after Nauru had earned independence, the island was periodically featured in press reports as a place of almost obscene riches, much as Dubai is invoked today. An Associated Press article from 1985 reported that Nauruans had "the world's highest per capita gross national product. . . higher even than Persian Gulf oil Sheikdoms." Everyone had free health care, housing, and education; homes were kept cool with air-conditioning; and residents zoomed around their tiny island— it took twenty minutes to make the entire loop—in brand-new cars and motorcycles. A police chief famously bought himself a yellow Lamborghini. "When I was young," recalls Steshia Hubert, "we would go to parties where people would throw thousands of dollars on the babies. Extravagant parties—first, sixteenth, eighteenth, twenty-first, and fiftieth birthdays. . . . They would come with gifts like cars, pillows stuffed with hundred-dollar bills—for one-year-old babies!"<sup>6</sup>

All of Nauru's monetary wealth derived from an odd geological fact. For hundreds of thousands of years, when the island was nothing but a cluster of coral reefs protruding from the waves, Nauru was a popular pit stop for migrating birds, who dropped by to feast on the shellfish and mollusks. Gradually, the bird poop built up between the coral towers and spires, eventually hardening to form a rocky landmass. The rock was then covered over in topsoil and dense forest, creating a tropical oasis, of coconut palms, tranquil beaches, and thatched huts so beatific that the first European visitors dubbed the island Pleasant Isle.<sup>7</sup>

For thousands of years, Nauruans lived on the surface of their island, sustaining themselves on fish and black noddy birds. That began to change when a colonial officer picked up a rock that was later discovered to be made of almost pure phosphate of lime, a valuable agricultural fertilizer. A German-British firm began mining, later replaced by a British-Australian-New Zealand venture.<sup>8</sup> Nauru started developing at record speed—tlu<sup>1</sup> catch was that it was, simultaneously, committing suicide.

By the 1960s, Nauru still looked pleasant enough when approached from the sea, but it was a mirage. Behind the narrow fringe of coconut palms circling the coast lay a ravaged interior. Seen from above, the forest and topsoil of the oval island were being voraciously stripped away; the phosphate mined down to the island's sharply protruding bones, leaving behind a forest of ghostly coral totems. With the center now uninhabitable and largely infertile except for some minor scrubby vegetation, life on Nauru unfolded along the thin coastal strip, where the homes and civic structures were located.<sup>9</sup>

Nauru's successive waves of colonizers—whose economic emissaries ground up the phosphate rock into fine dust, then shipped it on ocean liners to fertilize soil in Australia and New Zealand—had a simple plan for the country: they would keep mining phosphate until the island was an empty shell. "When the phosphate supply is exhausted in thirty to forty years' time, the experts predict that the estimated population will not be able to live on this pleasant little island," a Nauruan council member said, rather stiffly, in a sixties-era black-and-white video produced by the Australian government. But not to worry, the film's narrator explained: "Preparations are being made now for the future of the Nauruan people. Australia has offered them a permanent home within, her own shores. . . . Their prospects are bright; their future is secure."<sup>10</sup>

Nauru, in other words, was developed to disappear, designed by the Australian government and the extractive companies that controlled its fate as a disposable country. It's not that they had anything against the place, no genocidal intent per se. It's just that one dead island that few even knew existed seemed like an acceptable sacrifice to make in the name of the progress represented by industrial agriculture.

When the Nauruans themselves took control of their country in 1968, they had hopes of reversing these plans. Toward that end, they put a large chunk of their mining revenues into a trust fund that they invested in what seemed like stable real estate ventures in Australia and Hawaii. The goal was to live off the fund's proceeds while winding down phosphate mining and beginning to rehabilitate their island's ecology—a costly task, but perhaps not impossible.<sup>11</sup>

The plan failed. Nauru's government received catastrophically bad investment advice, and the country's mining wealth was squandered. Meanwhile, Nauru continued to disappear, its white powdery innards loaded onto boats as the mining continued unabated. Meanwhile, decades of easy money had taken a predictable toll on Nauruans' life and culture. Politics was rife with corruption, drunk driving was a leading cause of death, average life expectancy was dimly low, and Nauru earned the dubious honor of being featured on a U.S. news show as "the fattest place on Earth" (half the adult population suffers from type 2 diabetes, the result of a diet comprised almost exclusively of imported processed food). "During the golden era when the royalties were rolling in, we didn't cook, we ate in restaurants," recalls Steshia Hubert, a health care worker. And even if the Nauruans had wanted to eat differently, it would have been hard: with so much of the island a latticework of deep dark holes, growing enough fresh produce to feed the population was pretty much impossible. A bitterly ironic infertility for an island whose main export was agricultural fertilizer.<sup>12</sup>

By the 1990s, Nauru was so desperate for foreign currency that it pursued some distinctly shady get-rich-quick schemes. Aided greatly by the wave of financial deregulation unleashed in this period, the island became a prime money-laundering haven. For a time in the late 1990s, Nauru was the titular "home" to roughly four hundred phantom banks that were utterly unencumbered by monitoring, oversight, taxes, and regulation. Nauru-registered shell banks

were particularly popular among Russian gangsters, who reportedly laundered a staggering \$70 billion of dirty money through the island nation (to put that in perspective, Nauru's entire GDP is \$72 million, according to most recent figures). Giving the country partial credit for the collapse of the Russian economy, a *New York Times Magazine* piece in 2000 pronounced that "amid the recent proliferation of money-laundering centers that experts estimate has ballooned into a \$5 trillion shadow economy, Nauru is Public Enemy #1."<sup>13</sup>

These schemes have since caught up with Nauru too, and now the country faces a double bankruptcy: with 90 percent of the island depleted from mining, it faces ecological bankruptcy; with a debt of at least \$800 million, Nauru faces financial bankruptcy as well. But these are not Nauru's only problems. It now turns out that the island nation is highly vulnerable to a crisis it had virtually no hand in creating: climate change and the drought, ocean acidification, and rising waters it brings. Sea levels around Nauru have been steadily climbing by about 5 millimeters per year since 1993, and much more could be on the way if current trends continue. Intensified droughts are already causing severe freshwater shortages.<sup>14</sup>

A decade ago, Australian philosopher and professor of sustainability Glenn Albrecht set out to coin a term to capture the particular form of psychological distress that sets in when the homelands that we love and from which we take comfort are radically altered by extraction and industrialization, rendering them alienating and unfamiliar. He settled on "solastalgia," with its evocations of solace, destruction, and pain, and defined the new word to mean, "the homesickness you have when you are still at home." He explained that although this particular form of unease was once principally familiar to people who lived in sacrifice zones—lands decimated by open-pit mining, for instance, or clear-cut logging—it was fast becoming a universal human experience, with climate change creating a "new abnormal" wherever we happen to live. "As bad as local and regional negative transformation is, it is the big picture, the Whole Earth, which is now a home under assault. A feeling of global dread asserts itself as the planet heats and our climate gets more hostile and unpredictable," he writes.<sup>15</sup>

Some places are unlucky enough to experience both local and global solastalgia simultaneously. Speaking to the 1997 U.N. climate conference that adopted the Kyoto Protocol, Nauru's then-president Kinza Clodumar described the collective claustrophobia that had gripped his country: "We are trapped, a wasteland at our back, and to our front a terrifying, rising flood of biblical proportions."<sup>16</sup> Few places on earth embody the suicidal results of building our economies on polluting extraction more graphically than Nauru. Thanks to its mining of phosphate, Nauru has spent the last century disappearing from the inside out; now, thanks to our collective? mining of fossil fuels, it is disappearing from the outside in.

In a 2007 cable about Nauru, made public by WikiLeaks, an unnamed U.S. official summed up his government's analysis of what went wrong on the island: "Nauru simply spent extravagantly, never worrying about tomorrow."<sup>17</sup> Fair enough, but that diagnosis is hardly unique to Nauru; our entire culture is extravagantly drawing down finite resources, never worrying about tomorrow. For a couple of hundred years we have been telling ourselves that we can dig the midnight black remains of other life forms out of the bowels of the earth, burn them in massive quantities, and that the airborne particles and gases released into the atmosphere—because we can't see them—will have no effect whatsoever. Or if they do, we humans, brilliant as we are, will just invent our way out of whatever mess we have made.

And we tell ourselves all kinds of similarly implausible no-consequences stories all the time, about how we can ravage the world and suffer no adverse effects. Indeed we are always surprised when it works out otherwise. We extract and do not replenish and wonder why the fish have disappeared and the soil requires ever more "inputs" (like phosphate) to stay fertile. We occupy countries and arm their militias and then wonder why they hate us. We drive down wages, ship jobs overseas, destroy worker protections, hollow out local economies, then wonder why people can't afford to shop as much as they used to. We offer those failed

shoppers subprime mortgages instead of steady jobs and then wonder why no one foresaw that a system built on bad debts would collapse.

At every stage our actions are marked by a lack of respect for the powers we are unleashing—a certainty, or at least a hope, that the nature we have turned to garbage, and the people we have treated like garbage, will not come back to haunt us. And Nauru knows all about this too, because in the past decade it has become a dumping ground of another sort. In an effort to raise much needed revenue, it agreed to house an offshore refugee detention center for the government of Australia. In what has become known as "the Pacific Solution," Australian navy and customs ships intercept boats of migrants and immediately fly them three thousand kilometers to Nauru (as well as to several other Pacific islands). Once on Nauru, the migrants—most from Afghanistan, Sri Lanka, Iraq, Iran, and Pakistan—are crammed into a rat-infested guarded camp made up of rows of crowded, stiflingly hot tents. The island imprisonment can last up to five years, with the migrants in a state of constant limbo about their status, something the Australian government hopes will serve as a deterrent to future refugees.<sup>18</sup>

The Australian and Nauruan governments have gone to great lengths to limit information on camp conditions and have prevented journalists who make the long journey to the island from seeing where migrants are being housed. But the truth is leaking out nonetheless: grainy video of prisoners chanting "We are not animals"; reports of mass hunger strikes and suicide attempts; horrifying photographs of refugees who had sewn their own mouths shut, using paper clips as needles; an image of a man who had badly mutilated his neck in a failed hanging attempt. There are also images of toddlers playing in the dirt and huddling with their parents under tent flaps for shade (originally the camp had housed only adult males, but now hundreds of women and children have been sent there too). In June 2013, the Australian government finally allowed a BBC crew into the camp in order to show off its brand-new barracks—but that PR attempt was completely upstaged one month later by the news that a prisoner riot had almost completely destroyed the new facility, leaving several prisoners injured.<sup>19</sup>

Amnesty International has called the camp on Nauru "cruel" and "degrading," and a 2013 report by the United Nations High Commissioner for Refugees concluded that those conditions, "coupled with the protracted period spent there by some asylum-seekers, raise serious issues about their compatibility with international human rights law, including the prohibition against torture and cruel, inhuman or degrading treatment." Then, in March 2014, a former Salvation Army employee named Mark Isaacs, who had been stationed at the camp, published a tell-all memoir titled *The Undesirables*. He wrote about men who had survived wars and treacherous voyages losing all will to live on Nauru, with one man resorting to swallowing cleaning fluids, another driven mad and barking like a dog. Isaacs likened the camp to "death factories," and said in an interview that it is about "taking resilient men and grinding them into the dust." On an island that itself was systematically ground to dust, it's a harrowing image. As harrowing as enlisting the people who could very well be the climate refugees of tomorrow to play warden to the political and economic refugees of today.<sup>20</sup>

Reviewing the island's painful history, it strikes me that so much of what has gone wrong on Nauru—and goes on still—has to do with its location, frequently described as "the middle of nowhere" or, in the words of a 1921 National Geographic dispatch, "perhaps the most remote territory in the world," a tiny dot "in lonely seas." The nation's remoteness made it a convenient trash can—a place to turn the land into trash, to launder dirty money, to disappear unwanted people, and now a place that may be allowed to disappear altogether.<sup>21</sup>

This is our relationship to much that we cannot easily see and it is a big part of what makes carbon pollution such a stubborn problem: we can't see it, so we don't really believe it exists. Ours is a culture of disavowal, of simultaneously knowing and not knowing—the illusion of proximity coupled with the reality of distance is the trick perfected by the fossil-fueled global market. So we both know and don't know who makes our goods, who cleans up after us, where our waste disappears to—whether it's our sewage or electronics or our carbon emissions.

But what Nauru's fate tells us is that there is no middle of nowhere, nowhere that doesn't "count"—and that nothing ever truly disappears. On some level we all know this, that we are part of a swirling web of connections. Yet we are trapped in linear narratives that tell us the opposite: that can expand infinitely, that there will always be more space to absorb our waste, more resources to fuel our wants, more people to abuse.

These days, Nauru is in a near constant state of political crisis, with fresh corruption scandals perpetually threatening to bring down the government, and sometimes succeeding. Given the wrong visited upon the nation, the island's leaders would be well within their rights to point fingers outward—at their former colonial masters who flayed them, at the investors who fleeced them, and at the rich countries whose emissions now threaten to drown them. And some do. But several of Nauru's leaders have also chosen to do something else: to hold up their country as a kind of warning to a warming world.

In *The New York Times* in 2011, for instance, then-president Marcus Stephen wrote that Nauru provides "an indispensable cautionary tale about life in a place with hard ecological limits." It shows, he claimed, "what can happen when a country runs out of options. The world is headed down a similar path with the relentless burning of coal and oil, which is altering the planet's climate, melting ice caps, making oceans more acidic and edging us ever closer to a day when no one will be able to take clean water, fertile soil or abundant food for granted." In other words, Nauru isn't the only one digging itself to death; we all are.<sup>22</sup>

But the lesson Nauru has to teach is not only about the dangers of fossil fuel emissions. It is about the mentality that allowed so many of us, and our ancestors, to believe that we could relate to the earth with such violence in the first place—to dig and drill out the substances we desired while thinking little of the trash left behind, whether in the land and water where the extraction takes place, or in the atmosphere, once the extracted material is burned. This carelessness is at the core of an economic model some political scientists call "extractivism," a term originally used to describe economies based on removing ever more raw materials from the earth, usually for export to traditional colonial powers, where "value" was added. And it's a habit of thought that goes a long way toward explaining why an economic model based on endless growth ever seemed viable in the first place. Though developed under capitalism, governments across the ideological spectrum now embrace this resource-depleting model as a road to development, and it is this logic that climate change calls profoundly into question.

Extractivism is a nonreciprocal, dominance-based relationship with the earth, one purely of taking. It is the opposite of stewardship, which involves taking but also taking care that regeneration and future life continue. Extractivism is the mentality of the mountaintop remover and the old-growth clear-cutter. It is the reduction of life into objects for the use of others, giving them no integrity or value of their own—turning living complex ecosystems into "natural resources," mountains into "overburden." (as the mining industry terms the forests, rocks, and streams that get in the way of its bulldozers). It is also the reduction of human beings either into labor to be brutally extracted, pushed beyond limits, or, alternatively, into social burden, problems to be locked out at borders and locked away in prisons or reservations. In an extractivist economy, the interconnections among these various objectified components of life are ignored; the consequences of severing them are of no concern.

Extractivism is also directly connected to the notion of sacrifice zones—places that, to their extractors, somehow don't count and therefore can be poisoned, drained, or otherwise destroyed, for the supposed greater good of economic progress. This toxic idea has always been intimately tied to imperialism, with disposable peripheries being harnessed to feed a glittering center, and it is bound up too with notions of racial superiority, because in order to have sacrifice zones, you need to have people and cultures who count so little that they are considered deserving of sacrifice. Extractivism ran rampant under colonialism because relating to the world as a frontier of conquest—rather than as home—fosters this particular brand of

irresponsibility. The colonial mind nurtures the belief that there is always somewhere else to go to and exploit once the current site of extraction has been exhausted.

These ideas predate industrial-scale extraction of fossil fuels. And yet the ability to harness the power of coal to power factories and ships is what, more than any single other factor, enabled these dangerous ideas to conquer the world. It's a history worth exploring in more depth, because it goes a long way toward explaining how the climate crisis challenges not only capitalism but the underlying civilizational narratives about endless growth and progress within which we are all, in one way or another, still trapped.

### **The Ultimate Extractivist Relationship**

If the modern-day extractive economy has a patron saint, the honor should probably go to Francis Bacon. The English philosopher, scientist, and statesman is credited with convincing Britain's elites to abandon, once and for all, pagan notions of the earth as a life-giving mother figure to whom we owe respect and reverence (and more than a little fear) and accept the role as her dungeon master. "For you have but to follow and as it were hound nature in her wanderings," Bacon wrote in *De Augmentis Scientiarum* in 1623, "and you will be able, when you like, to lead and drive her afterwards to the same place again. . . . Neither ought a man to make scruple of entering and penetrating into these holes and corners, when the inquisition of truth is his sole object."<sup>23</sup> (Not surprisingly, feminist scholars have filled volumes analyzing the ex—Lord Chancellor's metaphor choices.)

These ideas of a completely knowable and controllable earth animated not only the Scientific Revolution but, critically, the colonial project as well, which sent ships crisscrossing the globe to poke and prod and bring the secrets, and wealth, back to their respective crowns. The mood of human invincibility that governed this epoch was neatly encapsulated in the words of clergyman and philosopher William Derham in his 1713 book *Physico-Theology*: "We can, if need be, ransack the whole globe, penetrate into the bowels of the earth, descend to the bottom of the deep, travel to the farthest regions of this world, to acquire wealth."<sup>24</sup>

And yet despite this bravado, throughout the 1700s, the twin projects of colonialism and industrialization were still constrained by nature on several key fronts. Ships carrying both slaves and the raw materials they harvested could sail only when winds were favorable, which could lead to long delays in the supply chain. The factories that turned those raw materials into finished products were powered by huge water wheels. They needed to be located next to waterfalls or rapids which made them dependent on the flow and levels of rivers. As with high or low winds at sea, an especially dry or wet spell meant that working hours in the textile, flour, and sugar mills had to be adjusted accordingly—a mounting annoyance as markets expanded and became more global.

Many water-powered factories were, by necessity, spread out around the countryside, near bodies of fast-moving water. As the Industrial Revolution matured and workers in the mills started to strike and even riot for better wages and conditions, this decentralization made factory owners highly vulnerable, since quickly finding replacement workers in rural areas was difficult.

Beginning in 1776, a Scottish engineer named James Watt perfected and manufactured a power source that offered solutions to all these vulnerabilities. Lawyer and historian Barbara Freese describes Watt's steam engine as "perhaps the most important invention in the creation of the modern world"—and with good reason.<sup>25</sup> By adding a separate condenser, air pump, and later a rotary mechanism to an older model, Watt was able to make the coal-fired steam engine vastly more powerful and adaptable than its predecessors. In contrast, the new machines could power a broad range of industrial operations, including, eventually, boats.

For the first couple of decades, the new engine was a tough sell. Water power, after all, had a lot going for it compared with coal. For one thing, it was free, while coal needed to be continually re-purchased. And contrary to the widespread belief that the steam engine provided

more energy than water wheels, the two were actually comparable, with the larger wheels packing several times more horsepower than their coal-powered rivals. Water wheels also operated more smoothly, with fewer technical breakdowns, so long as the water was flowing. "The transition from water to steam in the British cotton industry did not occur because water was scarce, less powerful, or more expensive than steam," writes Swedish coal expert Andreas Malm. "To the contrary, steam gained supremacy *in spite of water being abundant, at least as powerful, and decidedly cheaper,*"<sup>26</sup>

As Britain's urban population ballooned, two factors tipped the balance in favor of the steam engine. The first was the new machine's insulation from nature's fluctuations: unlike water wheels, steam engines worked at the same rate all the time, so long as there was coal to feed them and the machinery wasn't broken. The flow rates of rivers were of no concern. Steam engines also worked anywhere, regardless of the geography, which meant that factory owners could shift production from more remote areas to cities like London, Manchester, and Lancaster, where there were gluts of willing industrial workers, making it far easier to fire troublemakers and put down strikes. As an 1832 article written by a British economist explained, "The invention of the steam-engine has relieved us from the necessity of building factories in inconvenient situations merely for the sake of a waterfall." Or as one of Watt's early biographers put it, the generation of power "will no longer depend, as heretofore, on the most inconstant of natural causes—on atmospheric influences."<sup>27</sup>

Similarly, when Watt's engine was installed in a boat, ship crews were liberated from having to adapt their journeys to the winds, a development that rapidly accelerated the colonial project and the ability of European powers to easily annex countries in distant lands. As the Earl of Liverpool put it in a public meeting to memorialize James Watt in 1824, "Be the winds friendly or be they contrary, the power of the Steam Engine overcomes all difficulties. . . . Let the wind blow from whatever quarter it may, let the destination of our force be to whatever part of the world it may, you have the power and the means, by the Steam Engine, of applying that force at the proper time and in the proper manner."<sup>28</sup> Not until the advent of electronic trading would commerce feel itself so liberated from the constraints of living on a planet bound by geography and governed by the elements.

Unlike the energy it replaced, power from fossil fuel always required sacrifice zones—whether in the black lungs of the coal miners or the poisoned waterways surrounding the mines. But these prices were seen as worth paying in exchange for coal's intoxicating promise of freedom from the physical world—a freedom that unleashed industrial capitalism's full force to dominate both workers and other cultures. With their portable energy creator, the industrialists and colonists of the 1800s could now go wherever labor was cheapest and most exploitable, and wherever resources were most plentiful and valuable. As the author of a steam engine manual wrote in the mid-1830s, "Its mighty services are always at our command, whether in winter or in summer, by day or by night—it knows of no intermission but what our wishes dictate."<sup>29</sup> Coal represented, in short, total domination, of both nature and other people, the full realization of Bacon's dream at last. "Nature can be conquered," Watt reportedly said, "if we can but find her weak side."<sup>30</sup>

Little wonder then that the introduction of Watt's steam engine coincided with explosive levels of growth in British manufacturing, such that in the eighty years between 1760 and 1840, the country went from importing 2.5 million pounds of raw cotton to importing 366 million pounds of raw cotton, a genuine revolution made possible by the potent and brutal combination of coal at home and slave labor abroad.<sup>31</sup>

This recipe produced more than just new consumer products. In *Ecological Economics*, Herman Daly and Joshua Parley point out that Adam Smith published *The Wealth of Nations* in 1776—the same year that Watt produced his first commercial steam engine. "It is no coincidence," they write, "that the market economy and fossil fuel economy emerged at essentially the exact same time. . . . New technologies and vast amounts of fossil energy

allowed unprecedented production of consumer goods. The need for new markets for these mass-produced consumer goods and new sources of raw material played a role in colonialism and the pursuit of empire. The market economy evolved as an efficient way of allocating such goods, and stimulating the production of even more.<sup>32</sup> Just as colonialism needed coal to fulfill its dream of total domination, the deluge of products made possible by both coal and colonialism needed modern capitalism.

The promise of liberation from nature that Watt was selling in those early days continues to be the great power of fossil fuels. That power is what allows today's multinationals to scour the globe for the cheapest, most exploitable workforce, with natural features and events that once appeared as obstacles—vast oceans, treacherous landscapes, seasonal fluctuations—no longer even registering as minor annoyances. Or so it seemed for a time.

It is often said that Mother Nature bats last, and this has been poignantly the case for some of the men who were most possessed by the ambition of conquering her. A perhaps apocryphal story surrounds the death of Francis Bacon: in an attempt to test his hypothesis that frozen meat could be prevented from rotting, he traipsed around in chilly weather stuffing a chicken full of snow. As a result, it is said, the philosopher caught pneumonia, which eventually led to his demise.<sup>33</sup> Despite some controversy, the anecdote survives for its seeming poetic justice: a man who thought nature could be bent to his will died from simple exposure to the cold.

A similar story of comeuppance appears to be unfolding for the human race as a whole. Ralph Waldo Emerson called coal "a portable climate"—and it has been a smash success, carrying countless advantages, from longer life spans to hundreds of millions freed from hard labor.<sup>34</sup> And yet precisely because our bodies are so effectively separated from our geographies, we who have access to this privilege have proven ourselves far too capable of ignoring the fact that we aren't just changing our personal climate but the entire planet's climate as well, warming not just the indoors but the outdoors too. And yet the warming is no less real for our failure to pay attention.

The harnessing of fossil fuel power seemed, for a couple of centuries at least, to have freed large parts of humanity from the need to be in constant dialogue with nature, having to adjust its plans, ambitions, and schedules to natural fluctuations and topographies. Coal and oil, precisely because they were fossilized, seemed entirely possessable forms of energy. They did not behave independently—not like wind, or water, or, for that matter, workers. Just as Watt's engine promised, once purchased, they produced power wherever and whenever their owners wished—the ultimate nonreciprocal relationship.

But what we have learned from atmospheric science is that the give-and-take, call-and-response that is the essence of all relationships in nature was not eliminated with fossil fuels, it was merely delayed, all the while gaining force and velocity. Now the cumulative effect of those centuries of burned carbon is in the process of unleashing the most ferocious natural tempers of all.

As a result, the illusion of total power and control Watt and his cohorts once peddled has given way to the reality of near total powerlessness and loss of control in the face of such spectacular forces as Hurricane Sandy and Typhoon Haiyan. Which is just one of the reasons climate change is so deeply frightening. Because to confront this crisis truthfully is to confront ourselves—to reckon, as our ancestors did, with our vulnerability to the elements that make up both the planet and our bodies. It is to accept (even embrace) being but one porous part of the world, rather than its master or machinist, as Bacon long ago promised. There can be great well-being in that realization of interconnection, pleasure too. But we should not underestimate the depth of the civilizational challenge that this relationship represents. As Australian political scientist Clive Hamilton puts it, facing these truths about climate change "means recognizing

that the power relation between humans and the earth is the reverse of the one we have assumed for three centuries."<sup>35</sup>

For one of those centuries, a huge white marble statue of James Watt dominated St. Paul's chapel in Westminster Abbey, commemorating a man who "enlarged the resources of his Country" and "increased the power of Man." And Watt certainly did that: his engine massively accelerated the Industrial Revolution and the steamships his engine made possible subsequently opened sub-Saharan Africa and India to colonial pillage. So while making Europe richer, he also helped make many other parts of the world poorer, carbon-fueled inequalities that persist to this day. Indeed, coal was the black ink in which the story of modern capitalism was written.

But all the facts were not yet in when Watt was being memorialized in marble in 1825. Because it is the cumulative impact of the carbon emissions that began in those early mills and mines that has already engraved itself in the geologic record—in the levels of the oceans, in their chemical composition, in the slow erasure of islands like Nauru; in the retreat of glaciers, the collapse of ice shelves, the thawing of permafrost; in the disturbed soil cycles and in the charred forests.

Indeed, it turns out that coal's earliest casualties—the miners who died from black lung, the workers in the Satanic Mills—were not merely the price of progress. They were also an early warning that we were unleashing a poisonous substance onto the world. "It has become clear over the last century," writes Ecuadorian ecologist Esperanza Martfnez, "that fossil fuels, the energy sources of capitalism, destroy life—from the territories where they are extracted to the oceans and the atmosphere that absorb the waste."<sup>36</sup>

Jean-Paul Sartre called fossil fuels "capital bequeathed to mankind by other living beings"; they are quite literally the decayed remnants of long-dead life-forms. It's not that these substances are evil; it's just that they belong where they are: in the ground, where they are performing valuable ecological functions. Coal, when left alone, helpfully sequesters not just the carbon long ago pulled out of the air by plants, but all kinds of other toxins. It acts, as world-renowned Australian climate scientist Tim Flannery puts it, like "a natural sponge that absorbs many substances dissolved in ground-water, from uranium to cadmium and mercury."<sup>37</sup>

When coal is dug up and burned, however, those toxins are released in the ecosystem, eventually making their way into the oceans, where they are absorbed by krill and plankton, then by fish, and then by us. The released carbon, meanwhile, enters the atmosphere, causing global warming (not to mention coal's contribution to the smog and particulate pollution that have plagued urban society since the Industrial Revolution, afflicting untold numbers of people with respiratory, heart, and other diseases).

Given this legacy, our task is not small, but it is simple: rather than a society of grave robbers, we need to become a society of life amplifiers, deriving our energy directly from the elements that sustain life. It's time to let the dead rest.

## **The Extractivist Left**

The braided historical threads of colonialism, coal, and capitalism shed significant light on why so many of us who are willing to challenge the injustices of the market system remain paralyzed in the face of the climate threat. Fossil fuels, and the deeper extractivist mind-set that they represent, built the modern world. If we are part of industrial or postindustrial societies, we are still living inside the story written in coal.

Ever since the French Revolution, there have been pitched ideological battles within the confines of this story: communists, socialists, and trade unions have fought for more equal distribution of the spoils of extraction, winning major victories for the poor and working classes. And the human rights and emancipation movements of this period have also fought valiantly against industrial capitalism's treatment of whole categories of our species as human sacrifice

zones, no more deserving of rights than raw commodities. These struggles have also won major victories against the dominance-based paradigm—against slavery, for universal suffrage, for equality under the law. And there have been voices in all of these movements, moreover, that identified the parallels between the economic model's abuse of the natural world and its abuse of human beings deemed worthy of being sacrificed, or at least uncounted. Karl Marx, for instance, recognized capitalism's "irreparable rift" with "the natural laws of life itself," while feminist scholars have long recognized that patriarchy's dual war against women's bodies and against the body of the earth were connected to that essential, corrosive separation between mind and body—and between body and earth—from which both the Scientific Revolution and Industrial Revolution sprang.<sup>38</sup>

These challenges, however, were mainly in the intellectual realm; Bacon's original, biblically inspired framework remained largely intact—the right of humans to place ourselves above the ecosystems that support us and to abuse the earth as if it were an inanimate machine. The strongest challenges to this worldview have always come from outside its logic, in those historical junctures when the extractive project clashes directly with a different, older way of relating to the earth—and that older way fights back. This has been true from the earliest days of industrialization, when English and Irish peasants, for instance, revolted against the first attempts to enclose communal lands, and it has continued in clashes between colonizers and Indigenous peoples through the centuries, right up to—as we will see—the Indigenous-led resistance to extreme fossil fuel extraction gaining power today.

But for those of us born and raised inside this system, though we may well see the dead-end flaw of its central logic, it can remain intensely difficult to see a way out. And how could it be otherwise? Post-Enlightenment Western culture does not offer a road map for how to live that is not based on an extractivist, nonreciprocal relationship with nature.

This is where the right-wing climate deniers have overstated their conspiracy theories about what a cosmic gift global warming is to the left. It is true, as I have outlined, that many climate responses reinforce progressive support for government intervention in the market, for greater equality, and for a more robust public sphere. But the deeper message carried by the ecological crisis—that humanity has to go a whole lot easier on the living systems that sustain us, acting regeneratively rather than extractively—is a profound challenge to large parts of the left as well as the right. It's a challenge to some trade unions, those trying to freeze in place the dirtiest jobs, instead of fighting for the good clean jobs their members deserve. And it's a challenge to the overwhelming majority of center-left Keynesians, who still define economic success in terms of traditional measures of GDP growth, regardless of whether that growth comes from rampant resource extraction. (This is all the more baffling because Keynes himself, like John Stuart Mill, advocated a transition to a post-growth economy,)

It's a challenge, too, to those parts of the left that equated socialism with the authoritarian rule of the Soviet Union and its satellites (though there was always a rich tradition, particularly among anarchists, that considered Stalin's project an abomination of core social justice principles). Because the fact is that those self-described socialist states devoured resources with as much enthusiasm as their capitalist counterparts, and spewed waste just as recklessly. Before the fall of the Berlin Wall, for instance, Czechs and Russians had even higher carbon footprints per capita than Canadians and Australians. Which is why one of the only times the developed world has seen a precipitous emissions drop was after the economic collapse of the former Soviet Union in the early 1990s. Mao Zedong, for his part, openly declared that "man must conquer nature," setting loose a devastating onslaught on the natural world that transitioned seamlessly from clear-cuts under communism to mega-dams under capitalism. Russia's oil and gas companies, meanwhile, were as reckless and accident-prone under state socialist control as they are today in the hands of the oligarchs and Russia's corporatist state.<sup>39</sup>

And why wouldn't they be? Authoritarian socialism and capitalism share strong tendencies toward centralizing (one in the hands of the state, the other in the hands of corporations). They also both keep their respective systems going through ruthless expansion—whether through production for production's sake, in the case of Soviet-era socialism, or consumption for consumption's sake, in the case of consumer capitalism.

One possible bright spot is Scandinavian-style Social Democracy, which has undoubtedly produced some of the most significant green breakthroughs in the world, from the visionary urban design of Stockholm, where roughly 74 percent of residents walk, bike, or take public transit to work, to Denmark's community-controlled wind power revolution. And yet Norway's late-life emergence as a major oil producer—with majority state-owned Statoil tearing up the Alberta tar sands and gearing up to tap massive reserves in the Arctic—calls into question whether these countries are indeed charting a path away from extractivism.<sup>40</sup>

In Latin America and Africa, moving away from overdependence on raw resource extraction and export, and toward more diversified economies, has always been a central piece of the postcolonial project. And yet some countries where left and center-left governments have come to power over the last decade are moving in the opposite direction. The fact that this tendency is little discussed outside the continent should not be surprising. Progressives around the world have rightfully cheered Latin America's electoral "pink tide," with government after government coming to power promising to reduce inequality, tackle extreme poverty, and take back control over the extractive industries of their respective countries. And purely from the perspective of poverty reduction, the results have often been stunning.

Since the election of Luiz Inacio Lula da Silva, and now under the leadership of his former chief of staff, Dilma Rousseff, Brazil has reduced its extreme poverty rate by 65 percent in a single decade, according to the government. More than thirty million people have been lifted out of poverty. After the election of Hugo Chavez, Venezuela slashed the percentage of the population living in extreme poverty by more than half—from 16.6 percent in 1999 to 7 percent in 2011, according to government statistics.

College enrollment has doubled since 2004. Ecuador under Rafael Correa has dropped its poverty rates by 32 per cent, according to the World Bank. In Argentina, urban poverty plummeted from 54.7 percent in 2003 to 6.5 percent in 2011, according to government data collected by the U.N.<sup>41</sup>

Bolivia's record, under the presidency of Evo Morales, is also impressive. It has reduced the proportion of its population living in extreme poverty from 38 percent in 2005 to 21.6 percent in 2012, according to government figures.<sup>42</sup> And unemployment rates have been cut in half. Most importantly, while other developing countries have used growth to create societies of big winners and big losers, Bolivia is actually succeeding in building a more equal society. Alicia Barcena Ibarra, executive secretary of the U.N. Economic Commission for Latin America and the Caribbean, observes that in Bolivia "the gap between rich and poor has been hugely narrowed."<sup>43</sup>

All of this is a marked improvement over what came before, when the wealth extracted from each of these countries was overwhelmingly concentrated among a tiny elite, with far too much of it fleeing the continent entirely. And yet these left and center-left governments have so far been unable to come up with economic models that do not require extremely high levels of extraction of finite resources, often at tremendous ecological and human cost. This is true for Ecuador, with its growing oil dependence, including oil from the Amazon; Bolivia, with its huge dependence on natural gas; Argentina, with its continued support for open-pit mining and its "green deserts" of genetically modified soy and other crops; Brazil, with its highly contentious mega-dams and forays into high-risk offshore oil drilling; and of course it has always been the case for petro-dependent Venezuela. Moreover, most of these governments have made very little progress on the old dream of diversifying their economies away from raw resource exports—in fact, between 2004 and 2011, raw resources as a percentage of overall exports

increased in all of these countries except Argentina, though some of this increase was no doubt due to rising commodity prices. It hasn't helped that China has been throwing easy credit around the continent, in some cases demanding to be paid back in oil.<sup>44</sup>

This reliance on high risk and ecologically damaging forms of extraction is particularly disappointing in the governments of Evo Morales in Bolivia and Rafael Correa in Ecuador. In their first terms, both had signaled that a new, nonextractive chapter was beginning in their countries. Part of this involved granting real respect to the Indigenous cultures that had survived centuries of marginalization and oppression and that form powerful political constituencies in both countries. Under Morales and Correa, the Indigenous concepts of *sumak kawsay* and *buen vivir*, which strive to build societies in harmony with nature (in which everyone has enough, rather than more and more), became the discourse of government, even recognized in law. But in both cases, escalating industrial-scale development and extraction has overtaken this promising rhetoric. According to Ecuador's Esperanza Martinez, "Since 2007, Correa's has been the most extractive government in the history of the country, in terms of oil and now also mining." Indeed Latin American intellectuals have invented a new term to describe what they are experiencing: "progressive extractivism."<sup>45</sup>

The governments claim they have no choice—that they need to pursue extractive policies in order to pay for programs that alleviate poverty. And in many ways this explanation comes-back to the question of climate debt: Bolivia and Ecuador have been at the forefront of the coalition of governments asking that the countries responsible for the bulk of historical greenhouse gas emissions help to pay for the Global South's transition, away from dirty energy and toward low-carbon development. These calls have been alternatively ignored and dismissed. Forced to choose between poverty and pollution, these governments are choosing pollution, but those should not be their only options.

The default overreliance on dirty extraction is not only a problem for progressives in the developing world. In Greece in May 2013, for instance, I was surprised to discover that the left-wing Syriza party—then the country's official opposition and held up by many progressive Europeans as the great hope for a real political alternative on the continent—did not oppose the governing coalition's embrace of new oil and gas exploration. Instead, it argued that any funds raised by the effort should be spent on pensions, not used to pay back creditors. In other words: they were not providing an alternative to extractivism but simply had better plans for distributing the spoils.

Far from seeing climate change as an opportunity to argue for their socialist Utopia, as conservative climate change deniers fear, Syriza had simply stopped talking about global warming altogether.

This is something that the party's leader, Alexis Tsipras, admitted to me quite openly in an interview: "We were a party that had the environment and climate change in the center of our interest," he said. "But after these years of depression in Greece, we forgot climate change."<sup>46</sup> At least he was honest.

The good news, and it is significant, is that large and growing social movements in all of these countries are pushing back against the idea that extraction-and-redistribution is the only route out of poverty and economic crisis. There are massive movements against gold mining in Greece, so large that Syriza has become a significant opponent of the mines. In Latin America, meanwhile, progressive governments are increasingly finding themselves in direct conflict with many of the people who elected them, facing accusations that their new model of what Hugo Chavez called "Twenty-first-Century Socialism" simply isn't new enough. Huge hydro dams in Brazil, highways through sensitive areas in Bolivia, and oil drilling in the Ecuadorian Amazon have all become internal flashpoints. Yes, the wealth is better distributed, particularly among the urban poor, but outside the cities, the ways of life of Indigenous peoples and peasants are still being endangered without their consent, and they are still being made landless by ecosystem

destruction. What is needed, writes Bolivian environmentalist Patricia Molina, is a new definition of development, "so that the goal is the elimination of poverty, and not of the poor."<sup>47</sup>

This critique represents more than just the push and pull of politics; it is a fundamental shift in the way an increasingly large and vocal political constituency views the goal of economic activity and the meaning of development. Space is opening up for a growing influence of Indigenous thought on new generations of activists, beginning, most significantly, with Mexico's Zapatista uprising in 1994, and continuing, as we will see, with the important leadership role that Indigenous land-rights movements are playing in pivotal anti-extraction struggles in North America, Latin America, Australia, and New Zealand. In part through these struggles, non-Indigenous progressive movements are being exposed to worldviews based on relationships of reciprocity and interconnection with the natural world that are the antithesis of extractivism. These movements have truly heard the message of climate change and are winning battles to keep significant amounts of carbon in the ground.

### **Some Warnings, Unheeded**

There is one other group that might have provided a challenge to Western culture's disastrous view of nature as a bottomless vending machine. That group, of course, is the environmental movement, the network of organizations that exists to protect the natural world from being devoured by human activity. And yet the movement has not played this role, at least not in a sustained and coherent manner.

In part, that has to do with the movement's unusually elite history, particularly in North America. When conservationism emerged as a powerful force in the late nineteenth and early twentieth centuries, it was primarily about men of privilege who enjoyed fishing, hunting, camping, and hiking and who recognized that many of their favorite wilderness spots were under threat from the rapid expansion of industrialization. For the most part, these men did not call into question the frenetic economic project that was devouring natural landscapes all over the continent—they simply wanted to make sure that some particularly spectacular pockets were set aside for their recreation and aesthetic appreciation. Like the Christian missionaries who traveled with traders and soldiers, most early preservationists saw their work as a civilizing addendum to the colonial and industrial projects—not as a challenge to them. Writing in 1914, Bronx Zoo director William Temple Hornaday summed up this ethos, urging American educators to "take up their share of the white man's burden" and help to "preserve the wild life of our country."<sup>48</sup>

This task was accomplished not with disruptive protests, which would have been unseemly for a movement so entrenched in the upper stratum of society. Instead, it was achieved through quiet lobbying, with well-bred men appealing to the noblesse oblige of other men of their class to save a cherished area by turning it into a national or state park, or a private family preserve—often at the direct expense of Indigenous people who lost access to these lands as hunting and fishing grounds.

There were those in the movement, however, who saw in the threats to their country's most beautiful places signs of a deeper cultural crisis. For instance, John Muir, the great naturalist writer who helped found the Sierra Club in 1892, excoriated the industrialists who dammed wild rivers and drowned beautiful valleys. To him they were heathens—"devotees of ravaging commercialism" who "instead of lifting their eyes to the God of the mountains, lift them to the Almighty Dollar."<sup>49</sup>

He was not the only heretic. A strain of radicalism drove some of the early Western ecological thinkers to argue for doing more than protecting isolated landscapes. Though frequently unacknowledged, these thinkers often drew heavily on Eastern beliefs about the interconnectedness of all life, as well as on Native American cosmologies that see all living creatures as our "relations."

In the mid-1800s, Henry David Thoreau wrote that, "The earth I tread on is not a dead, inert mass. It is a body, has a spirit, is organic, and fluid to the influence of its spirit, and to whatever particle of that spirit is in me" ("In the morning I bathe my intellect in the stupendous and cosmogonical philosophy of the Bhagvat Geeta," wrote Thoreau in *Walden* of the famous Indian scripture. He continued, "I lay down the book and go to my well for water and lo! there I meet the servant of the Brahmin, priest of Brahma and Vishnu and Indra, who still sits in his temple on the Ganges reading the Vedas, or dwells at the root of a tree with his crust and water jug. . . . The pure Walden water is mingled with the sacred water of the Ganges.") This was a straight repudiation of Francis Bacon's casting of the earth as an inert machine whose mysteries could be mastered by the human mind. And almost a century after Thoreau, Aldo Leopold, whose book *A Sand County Almanac* was the touchstone for a second wave of environmentalists, similarly called for an ethic that "enlarges the boundaries of the community to include soils, waters, plants, and animals" and that recognizes "the individual is a member of a community of interdependent parts." A "land ethic," as he called it, "changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such."<sup>50</sup>

These ideas were hugely influential in the evolution of ecological thought, but unattached to populist movements, they posed little threat to galloping industrialization. The dominant worldview continued to see humans as a conquering army, subduing and mechanizing the natural world. Even so, by the 1930s, with socialism on the rise around the world, the more conservative elements of the growing environmental movement sought to distance themselves from Leopold's "radical" suggestion that nature had an inherent value beyond its utility to man. If watersheds and old-growth forests had a "right to continued existence," as Leopold argued (a preview of the "rights of nature" debates that would emerge several decades later), then an owner's right to do what he wished with his land could be called into question. In 1935, Jay Norwood "Ding" Darling, who would later help found the National Wildlife Federation, wrote to Leopold warning him, "I can't get away from the idea that you are getting us out into water over our depth by your new philosophy of wildlife environment. The end of that road leads to socialization of property."<sup>51</sup>

By the time Rachel Carson published *Silent Spring* in 1962, the attempts to turn nature into a mere cog in the American industrial machine had grown so aggressive, so overtly militaristic, that it was no longer possible to pretend that combining capitalism with conservation was simply a matter of protecting a few pockets of green. Carson's book boiled over with righteous condemnations of a chemical industry that used aerial bombardment: to wipe out insects, thoughtlessly endangering human and animal life in the process. The marine biologist-turned-social-critic painted a vivid picture of the arrogant "control men" who, enthralled with "a bright new toy," hurled poisons "against the fabric of life."<sup>52</sup>

Carson's focus was DDT, but for her the problem was not a particular chemical; it was a logic. "The 'control of nature,'" Carson wrote, "is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man. . . . It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth."<sup>53</sup>

Carson's writing inspired a new, much more radical generation of environmentalists to see themselves as part of a fragile planetary ecosystem rather than as its engineers or mechanics, giving birth to the field of Ecological Economics. It was in this context that the underlying logic of extractivism—that there would always be more earth for us to consume—began to be forcefully challenged within the mainstream. The pinnacle of this debate came in 1972 when the Club of Rome published *The Limits to Growth*, a runaway best-seller that used early computer models to predict that if natural systems continued to be depleted at their current rate, humanity would overshoot the planet's carrying capacity by the middle of the twenty-first century. Saving a few

beautiful mountain ranges wouldn't be enough to get us out of this fix; the logic of growth itself needed to be confronted.

As author Christian Parenti observed recently of the book's lasting influence, "*Limits* combined the glamour of Big Science—powerful MIT computers and support from the Smithsonian Institution—with a focus on the interconnectedness of things, which fit perfectly with the new countercultural Zeitgeist." And though some of the book's projections have not held up over time—the authors underestimated, for instance, the capacity of profit incentives and innovative technologies to unlock new reserves of finite resources—*Limits* was right about the most important limit of all. On "the limits of natural 'sinks,' or the Earth's ability to absorb pollution," Parenti writes, "the catastrophically bleak vision of *Limits* is playing out as totally correct. We may find new inputs—more oil or chromium—or invent substitutes, but we have not produced or discovered more natural sinks. The Earth's capacity to absorb the filthy byproducts of global capitalism's voracious metabolism is maxing out. That warning has always been the most powerful part of *The Limits to Growth*."<sup>54</sup>

And yet in the most powerful parts of the environmental movement, in the key decades during which we have been confronting the climate threat, these voices of warning have gone unheeded. The movement did not reckon with limits of growth in an economic system built on maximizing profits, it instead tried to prove that saving the planet could be a great new business opportunity.

The reasons for this political timidity have plenty to do with the themes already discussed: the power and allure of free-market logic that usurped so much intellectual life in the late 1980s and 1990s, including large parts of the conservation movement. But this persistent unwillingness to follow science to its conclusions also speaks to the power of the cultural narrative that tells us that humans are ultimately in control of the earth, and not the other way around. This is the same narrative that assures us that, however bad things get, we are going to be saved at the last minute—whether by the market, by philanthropic billionaires, or by technological wizards—or best of all, by all three at the same time. And while we wait, we keep digging in deeper.

Only when we dispense with these various forms of magical thinking will we be ready to leave extractivism behind and build the societies we need within the boundaries we have—a world with no sacrifice zones, no new Naurus.

## Chapter 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<sup>1</sup>

*"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<sup>2</sup>

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.<sup>3</sup> 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.<sup>4</sup>

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.<sup>5</sup>

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 Tjelme-land, 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.<sup>6</sup>

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 Guantanamo. "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.<sup>7</sup>

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."<sup>8</sup> 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.<sup>9</sup>

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.<sup>10</sup>

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."<sup>11</sup>

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." <sup>u</sup>

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."<sup>13</sup>

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."<sup>14</sup>

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.<sup>15</sup>

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). (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."). And that is the barest of samplings.<sup>16</sup>

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).<sup>17</sup>

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. (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"). 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.<sup>18</sup>

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.<sup>19</sup>

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).<sup>20</sup> 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.<sup>21</sup>

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."<sup>22</sup>

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."<sup>23</sup>

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."<sup>24</sup>

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.<sup>25</sup>

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 Martinez 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.<sup>26</sup>

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."<sup>27</sup> (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).

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 ascendancy 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 environmental-ism." 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."<sup>28</sup>

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).<sup>29</sup> (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).

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.<sup>30</sup> 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 un-persuaded. 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."<sup>31</sup> (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."<sup>32</sup>

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 Kieran Suckling of the Center for Biological Diversity. "Now I may have to withdraw the former as well."<sup>33</sup>

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."<sup>34</sup> 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."<sup>35</sup>

### **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.<sup>36</sup> 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 DOT, 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.<sup>37</sup>

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.<sup>38</sup>

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.<sup>39</sup> (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).

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).<sup>40</sup>

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.<sup>41</sup>

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.<sup>42</sup>

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 (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 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."<sup>43</sup> 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 to impress 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 (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"). 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.<sup>44</sup>

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."<sup>45</sup>

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."<sup>46</sup>

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."<sup>47</sup>

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.<sup>48</sup>

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 tracking 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."<sup>49</sup>

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."<sup>50</sup>

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."<sup>51</sup>

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).<sup>52</sup>

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."<sup>53</sup>

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.)<sup>54</sup>

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 Bloomberg 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.<sup>55</sup>

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.<sup>56</sup>

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.<sup>57</sup>

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."<sup>58</sup>

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).<sup>59</sup> 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."<sup>60</sup>

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.<sup>61</sup>

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).<sup>62</sup> 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.<sup>63</sup>

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."<sup>64</sup> 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.<sup>65</sup> 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."<sup>66</sup>

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 Matsigenka 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" (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). 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.<sup>67</sup>

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.<sup>68</sup> 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 Parana, 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."<sup>69</sup>

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 Guaraquegaba, Brazil, locals have reported being shot at by park rangers while they searched the forest for food and plants inside the Parana 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.<sup>70</sup>

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 Aguan 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 Rodriguez of the Unified Campesino Movement of Aguan, 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."<sup>71</sup>

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."<sup>72</sup>

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 Buscher 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.<sup>73</sup>

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.<sup>74</sup>

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.<sup>75</sup> 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  $\frac{1}{2}$  and  $\frac{2}{3}$  of carbon credits bought into the ETS 'do not represent real carbon reductions.'"<sup>76</sup>

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.<sup>77</sup>

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.<sup>78</sup>

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."<sup>79</sup>

These "free allowances" to buy 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."<sup>80</sup> 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."<sup>81</sup>

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 center stage. 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 health-care 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.<sup>82</sup>

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."<sup>83</sup>

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

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).<sup>84</sup>

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.<sup>85</sup>

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."<sup>86</sup> 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.<sup>87</sup> 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.<sup>88</sup>

## Chapter 10

### Love Will Save This Place: Democracy, Divestment, and 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<sup>1</sup>

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

-Jason Bostic, Vice President of the West Virginia Coal Association, 2011<sup>2</sup>

On a drizzly British Columbia day in April 2012, a twenty-seven-seat turbo-prop 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 kilo-meters 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.<sup>3</sup> 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."<sup>4</sup>

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.<sup>5</sup> 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.<sup>6</sup>

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.)<sup>7</sup>

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.<sup>8</sup> (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).

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.<sup>9</sup>

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."<sup>10</sup> 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."<sup>11</sup>

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 McMoneys 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.<sup>12</sup>

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." <sup>u</sup> (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."<sup>14</sup>

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."<sup>15</sup>

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."<sup>16</sup>

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.<sup>17</sup>

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).<sup>18</sup>

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.<sup>19</sup>

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.<sup>20</sup>

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."<sup>21</sup>

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!"<sup>22</sup>

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?"<sup>23</sup> 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 Andres, 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."<sup>24</sup> (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.)

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.<sup>25</sup>

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."<sup>26</sup>

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.<sup>27</sup>

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 paddies 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.<sup>28</sup> 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.<sup>29</sup>

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."<sup>30</sup>

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<sub>25</sub>) 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.<sup>31</sup>

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.)<sup>32</sup>

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.<sup>33</sup>

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).<sup>34</sup> 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 fuel companies 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.<sup>35</sup> 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.<sup>36</sup>

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."<sup>37</sup>

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 only the 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.<sup>38</sup>

Predictably, these actions have provoked enormous tensions, with grassroots activists accusing the EDF of providing cover for polluters and undercutting their efforts.<sup>39</sup> (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 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.").

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.<sup>40</sup> (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.").

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 far 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.<sup>41</sup>

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.<sup>42</sup>

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.<sup>43</sup>

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.<sup>44</sup>

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."<sup>45</sup>

## **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."<sup>46</sup>

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.<sup>47</sup>

"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 Iana 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."<sup>48</sup>

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."<sup>49</sup>

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.<sup>50</sup>

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.<sup>51</sup> (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).

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.<sup>52</sup>

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.<sup>53</sup>

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 submitting 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.<sup>54</sup>

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."<sup>55</sup>

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.<sup>56</sup>

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 Bogota 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.<sup>57</sup>

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."<sup>58</sup>

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."<sup>59</sup>

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."<sup>60</sup> 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.

## Chapter 13

### The Right to Regenerate: Moving From Extraction to Renewal

*"Stop calling me resilient. I'm not resilient. Because every time you say, 'Oh, they're resilient,' you can do something else to me."*

-Trade Washington, New Orleans-based civil rights attorney, 2010<sup>1</sup>

*"That woman is the first environment is an original instruction. In pregnancy our bodies sustain life.... At the breast of women, the generations are nourished. From the bodies of women flows the relationship of those generations both to society and to the natural world. In this way is the earth our mother, the old people tell us. In this way, we as women are earth."*

-Katsi Cook, Mohawk midwife, 2007<sup>2</sup>

At the beginning of this book, I wrote about how becoming a mother in an age of extinction brought the climate crisis into my heart in a new way. I had felt the crisis before, of course, as all of us do on some level. But for the most part, my climate fears expressed themselves as low-level melancholy, punctuated by moments of panic, rather than full-blown grief.

At some point about seven years ago, I realized that I had become so convinced that we were headed toward a grim ecological collapse that I was losing my capacity to enjoy my time in nature. The more beautiful and striking the experience, the more I found myself grieving its inevitable loss—like someone unable to fall fully in love because she can't stop imagining the inevitable heartbreak.

Looking out at an ocean bay on British Columbia's Sunshine Coast, a place teeming with life, I would suddenly picture it barren—the eagles, herons, seals, and otters, all gone. It got markedly worse after I covered the BP spill in the Gulf of Mexico: for two years after, I couldn't look at any body of water without imagining it covered in oil. Sunsets were particularly difficult; the pink glow on the waves looked too much like petroleum sheen. And once, while grilling a beautiful piece of fresh sockeye salmon, I caught myself imagining how, as a wizened old woman, I would describe this extraordinary fish—its electric color, its jeweled texture—to a child living in a world where these wild creatures had disappeared.

I called my morbid habit "pre-loss," a variation on the "pre-crimes" committed in the movie *Minority Report*. And I know I'm not the only one afflicted. A few years ago, *The Nation* magazine, where I am a columnist, hosted a one-week cruise to Alaska. The full-page ad that ran in the magazine carried the tag line: "Come see the glaciers before they melt." I called my editor in a fury: How could we joke about melting glaciers while promoting a carbon-spewing holiday? Are we saying that global warming is funny? That we have no role to play in trying to stop it? The ad was pulled, but I realized then that, poor taste aside, this is how a great many of us are consuming wilderness these days—as a kind of nihilistic, final farewell. Gobble it all up before it's gone.

This ecological despair was a big part of why I resisted having kids until my late thirties. For years I joked about giving birth to a Mad Maxian climate warrior, battling alongside her friends for food and fuel. And I was also fully aware that if we were to avoid that future, we would all have to cut down on the number of super-consumers we were producing. It was around the time that I began work on this book that my attitude started to shift. Some of it, no doubt, was standard-issue denial (what does one more kid matter . . .). But part of it was also that immersing myself in the international climate justice movement had helped me imagine various futures that were decidedly less bleak than the post-apocalyptic cli-fi pastiche that had become my unconscious default. Maybe, just maybe, there was a future where replacing our own presence on earth could once again be part of a cycle of creation, not destruction.

And I was lucky: pregnant the first month we started trying. But then, just as fast, my luck ran out. A miscarriage. An ovarian tumor. A cancer scare. Surgery. Month after month of disappointing single pink lines on home pregnancy tests. Another miscarriage.

Then I stepped into the vortex I came to call the fertility factory ("do you have to call it that?" my patient husband pleaded). In its labyrinth of rooms in a downtown office building, drugs, hormones, and day surgeries were dispensed as liberally as toothbrushes at a dentist's office. The working assumption was that any woman who steps through the door will do whatever it takes to land a newborn in her arms, even if that means having three (or five) newborns instead of one. And even if that means seriously compromising her own health with risky drugs and poorly regulated medical procedures in the process.

I did try to be a good patient for a while, but it didn't work. The last straw was a doctor telling me, after my first (and only) round of in vitro fertilization (IVF) that I probably had "egg quality issues" and I should consider an egg donor. Feeling like a supermarket chicken past its best-before date, and with more than a few questions about how much these doctors were driven by a desire to improve their own "live birth" success rates, I stopped going. I tossed the pills, safely disposed of the syringes, and moved on.

Informing friends and family that I had given up on a technological fix to my apparent inability to conceive was surprisingly difficult. People often felt the need to tell me stories about friends and acquaintances who had become parents despite incredible odds. Usually these stories involved people who got pregnant using one of the technologies that I had decided not to try (with the guilt-inducing implication that, by drawing the line where I did, I was clearly not committed enough to procreation). Quite a few were about women who had used every technology available—nine rounds of IVF, egg donors, surrogacy—and then gotten pregnant as soon as they stopped. Common to all these stories was the unquestioned assumption that the body's No never really means no, that there is always a workaround. And, moreover, that there is something wrong with choosing not to push up against biological barriers if the technology is available.

On some level this faith is perfectly understandable. The female reproductive system is amazingly resilient—two ovaries and fallopian tubes when one would do; hundreds of thousands of eggs when all that is really needed are a few dozen good ones; and a generous window of opportunity to conceive spanning ages twelve to fifty (more or less). Yet what I felt my body telling me was that, even with all this ingenious built-in resilience, there is still a wall that can be hit, a place beyond which we cannot push. I felt that wall as a real structure inside my body and slamming against it had left me bruised. I didn't want to keep bashing away.

My resistance to further intervention did not come from some fixed idea about how babies should be conceived "naturally" or not at all. I know that for men and women with clear infertility diagnoses, these technologies are a joyous miracle, and that for gay, lesbian, and trans couples, some form of assisted reproduction is the only route to biological parenthood. And I believe that everyone who wants to become a parent should have the option, regardless of their marital status, sexual orientation, or income (in my view, these procedures should be covered by public health insurance, rather than restricted to those who can afford the astronomical fees).

What made me uneasy at the clinic were, oddly, many of the same things that made me wary of the geoengineers: a failure to address fundamental questions about underlying causes, as well as the fact that we seem to be turning to high-risk technologies not just when no other options are available, but at the first sign of trouble—even as a convenient shortcut ("tick tock," women of a certain age are told). Where I live, for instance, the system makes it significantly less complex to find an egg donor or a surrogate than to adopt a baby.

And then there is the matter of unacknowledged risks. Despite the casual attitude of many practitioners in this more than \$10 billion global industry, the risks are real. A Dutch study, for instance, showed that women who had undergone in vitro fertilization were twice as likely to develop "ovarian malignancies"; an Israeli one found that women who had taken the widely

prescribed fertility drug clomiphene citrate (which I was on) were at "significantly higher" risk for breast cancer; and Swedish researchers showed that IVF patients in the early stages of pregnancy were seven times more likely to develop a life-threatening blood clot in the lung. Other studies showed various kinds of risks to the children born of these methods.'

I did not know about this research when I was going to the clinic; my concerns stemmed from a generalized fear that by taking drugs that dramatically increased the number of eggs available for fertilization each month, I was overriding one of my body's safety mechanisms, forcing something that was better not forced. But there was little space for expressing these doubts at the clinic: conversations with the doctors were as brief as speed dates and questions seemed to be regarded as signs of weakness. Just look at all those joyous birth announcements from grateful couples papering every available surface in the examination rooms and hallways—what could be more important than that?

So why share these experiences and observations in a book about climate change? Partly in the spirit of transparency. The five years it took to research and write this book were the same years that my personal life was occupied with failed pharmaceutical and technological interventions, and ultimately, pregnancy and new motherhood. I tried, at first, to keep these parallel journeys segregated, but it didn't always work. Inevitably, one would escape its respective box to interrupt the other. What I was learning about the ecological crisis informed the responses to my own fertility crisis; and what I learned about fertility began to leave its mark on how I saw the ecological crisis.

Some of the ways in which these two streams in my life intersected were simply painful. For instance, if I was going through a particularly difficult infertility episode, just showing up to a gathering of environmentalists could be an emotional minefield. The worst part were the ceaseless invocations of our responsibilities to "our children" and "our grandchildren." I knew these expressions of intergenerational duty were heartfelt and in no way meant to be exclusionary—and yet I couldn't help feeling shut out. If caring about the future was primarily a function of love for one's descendants, where did that leave those of us who did not, or could not, have children? Was it even possible to be a real environmentalist if you didn't have kids?

And then there was the whole Earth Mother/Mother Earth thing: the idea that women, by right of our biological ability to carry children, enjoy a special connection to that fertile and bountiful matriarch that is the earth herself. I have no doubt that some women experience that bond with nature as a powerful creative force. But it's equally true that some of the most wildly creative and nurturing women (and men) that I know are childless by choice. And where did the equation of motherhood with the earth leave women like me, who wanted to conceive but were not able to? Were we exiles from nature? In my bleaker moments, I battled the conviction that the connection between my body and the cycle of creation had been unnaturally severed, like a dead telephone line.

But along the way, that feeling changed. It's not that I got in touch with my inner Earth Mother; it's that I started to notice that if the earth is indeed our mother, then far from the bountiful goddess of mythology, she is a mother facing a great many fertility challenges of her own. Indeed one of the most distressing impacts of the way in which our industrial activities affect the natural world is that they are interfering with systems at the heart of the earth's fertility cycles, from soil to precipitation. I also began to notice that a great many species besides ours are bashing up against their own infertility walls, finding it harder and harder to successfully reproduce and harder still to protect their young from the harsh new stresses of a changing climate.

On a much more optimistic note, I started to learn that protecting and valuing the earth's ingenious systems of reproducing life and the fertility of all of its inhabitants, may lie at the center of the shift in worldview that must take place if we are to move beyond extractivism. A worldview based on regeneration and renewal rather than domination and depletion.

## An Aquatic Miscarriage

Since I had already quit the clinic, I had no idea that I was pregnant when I went to Louisiana to cover the BP spill. A few days after I got home, though, I could tell something was off and did a home pregnancy test. Two lines this time, but the second one was strangely faint. "You can't be just a little bit pregnant," the saying goes. And yet that is what I seemed to be. After going in for more tests, my family doctor called to tell me (in the hope-dampening tone with which I had become familiar) that while I was pregnant my hormone levels were much too low and I would likely miscarry, for the third time.

Instantly my mind raced back to the Gulf. While covering the spill, I had breathed in toxic fumes for days and, at one point, waded up to my waist in contaminated water to get to a secluded beach covered in oil. I searched on the chemicals BP was using in huge quantities, and found reams of online chatter linking them to miscarriages. Whatever was happening, I had no doubt that it was my doing.

After about a week of monitoring, the pregnancy was diagnosed as ectopic, which means that the embryo had implanted itself outside the uterus, most likely in a fallopian tube. I was rushed from the doctor's office to the emergency room. Ectopics are a leading cause of maternal death, particularly in the developing world: if undiagnosed, the embryo keeps growing in its impossible location, causing a rupture and massive internal hemorrhaging. If caught in time, the somewhat creepy treatment is one or more injections of methotrexate, a powerful drug used in chemotherapy to arrest cell development (and carrying many of the same side effects). Once fetal development has stopped, the pregnancy miscarries on its own, but it can take weeks.

It was a tough, drawn-out loss for my husband and me. But it was also a relief to learn that the miscarriage had nothing to do with anything that had happened in the Gulf. Knowing that did make me think a little differently about my time covering the spill, however. As I waited for the pregnancy to "resolve," I thought in particular about a long clay spent on the *Flounder Pounder*, a sport fishing boat that a group of us had chartered as we went looking for evidence that the oil had entered the marshlands.

Our guide was Jonathan Henderson, an organizer with the Gulf Restoration Network, a heroic local organization devoted to repairing the damage done to the wetlands by the oil and gas industry. As we navigated through the narrow bayous of the Mississippi River Delta, Henderson kept leaning far over the side of the boat to get a better look at the bright green grass. What concerned him most was not what we were all seeing—fish jumping in fouled water, Roseau cane coated in reddish brown oil—but something much harder to detect, at least without a microscope and sample jars. Spring is the beginning of spawning season on the Gulf Coast and Henderson knew that these marshes were teeming with nearly invisible zooplankton and tiny juveniles that would develop into adult shrimp, oysters, crabs, and fin fish. In these fragile weeks and months, the marsh grass acts as an aquatic incubator, providing nutrients and protection from predators. "Everything is born in these wetlands," he said.<sup>4</sup> Unless, of course, something interferes with the process.

When fish are in their egg and larval phases, they have none of the defensive tools available to more mature animals. These tiny creatures travel where the tides carry them, unable to avoid whatever poison crosses their path. And at this early stage of development, exquisitely fragile membranes offer no protection from toxins; even negligible doses can cause death or mutation.

As far as Henderson was concerned, the prospects for these microscopic creatures did not look good. Each wave brought in more oil and dispersants, sending levels of carcinogenic polycyclic aromatic hydrocarbons (PAHs) soaring. And this was all happening at the absolute worst possible moment on the biological calendar: not only shellfish, but also bluefin tuna, grouper, snapper, mackerel, swordfish, and marlin were all spawning during these same key months. Out in the open water, floating clouds of translucent proto-life were just waiting for one

of the countless slicks of oil and dispersants to pass through them like an angel of death. As John Lamkin, a fisheries biologist for the National Oceanic and Atmospheric Administration, put it: "Any larvae that came into contact with the oil doesn't have a chance."<sup>5</sup>

Unlike the oil-coated pelicans and sea turtles, which were being featured on the covers of the world's newspapers that week, these deaths would attract no media attention, just as they would go uncounted in the official assessments of the spill's damage. Indeed, if a certain species of larva was in the process of being snuffed out, we would likely not find out about it for years—until those embryonic life-forms would have normally reached maturity. And then, rather than some camera-ready mass die-off, there would just be ... nothing. An absence. A hole in the life cycle.

That's what happened to the herring after the *Exxon Valdez* disaster. For three years after the spill, herring stocks were robust. But in the fourth, populations suddenly plummeted by roughly three quarters. The next year, there were so few, and they were so sick, that the herring fishery in Prince William Sound was closed. The math made sense: the herring that were in their egg and larval stages at the peak of the disaster would have been reaching maturity right about then.<sup>6</sup>

This was the kind of delayed disaster that Henderson was worried about as he peered into the marsh grass. When we reached Redfish Bay, usually a sport-fishing paradise, we cut the engine on the *Flounder Pounder* and drifted for a while in silence, taking video of the oily sheen that covered the water's surface.

As our boat rocked in that terrible place—the sky buzzing with Black Hawk helicopters and snowy white egrets—I had the distinct feeling that we were suspended not in water but in amniotic fluid, immersed in a massive multi-species miscarriage. When I learned that I too was in the early stages of creating an ill-fated embryo, I started to think of that time in the marsh as my miscarriage inside a miscarriage.

It was then that I let go of the idea that infertility made me some sort of exile from nature, and began to feel what I can only describe as a kinship of the infertile. It suddenly dawned on me that I was indeed part of a vast biotic community, and it was a place where a great many of us—humans and nonhuman alike—found ourselves engaged in an uphill battle to create new living beings.

### **A Country for Old Men**

For all the talk about the right to life and the rights of the unborn, our culture pays precious little attention to the particular vulnerabilities of children, let alone developing life. When drugs and chemicals are approved for safe use and exposure, risk assessments most often focus on the effects on adults. As biologist Sandra Steingraber has observed, "Entire regulatory systems are premised on the assumption that all members of the population basically act, biologically, like middle-aged men. . . . Until 1990, for example, the reference dose for radiation exposure was based on a hypothetical 5'7" tall white man who weighed 157 pounds." More than three quarters of the mass-produced chemicals in the United States have never been tested for their impacts on fetuses or children. That means they are being released in the environment with no consideration for how they will impact those who weigh, say, twenty pounds, like your average one-year-old girl, let alone a half-pound, like a nineteen-week fetus.<sup>7</sup>

And yet when clusters of infertility and infant illness arise, they very often are the first warning signs of a broader health crisis. For instance, for years it seemed that while there were certainly water and air safety issues associated with fracking, there was no clear evidence that the practice was seriously impacting human health. But in April 2014, researchers with the Colorado School of Public Health and Brown University published a peer-reviewed study looking at birth outcomes in rural Colorado, where a lot of fracking is under way. It found that mothers living in the areas with the most natural gas development were 30 percent more likely to have

babies with congenital heart defects than those who lived in areas with no gas wells near their homes. They also found some evidence that high levels of maternal exposure to gas extraction increased the risks of neurological defects.<sup>8</sup>

At around the same time, academics at Princeton, Columbia, and MIT gave a talk at the annual meeting of the American Economic Association, where they presented preliminary findings of a still unpublished study based on Pennsylvania birth records from 2004 to 2011. As Mark Whitehouse of *Bloomberg View* reported (he was one of the few journalists who saw their talk), "They found that proximity to fracking increased the likelihood of low birth weight by more than half, from about 5.6 percent to more than 9 percent. The chances of a low Apgar score, a summary measure of the health of newborn children, roughly doubled."<sup>9</sup>

These kinds of infant health impacts—and much worse—are all too familiar in communities that live in closest proximity to the dirtiest parts of our fossil fuel economy. For instance, the Aamjiwnaang First Nation, which is located just south of the industrial city of Sarnia in southern Ontario, has been the subject of intense scientific scrutiny because of its "lost boys." Up until 1993, the number of boys and girls born to the small Indigenous community was pretty much in keeping with the national average, with slightly more boys than girls. But as people continued living near the petrochemical plants, which had earned the region the nicknamed "Chemical Valley," that changed. By 2003, the day care was filled with girls and just a handful of boys, and there were years when the community could barely scrape together enough boys to form a baseball or hockey team. Sure enough, a study of birth records confirmed that by the end of the period between 1993 and 2003, twice as many girls as boys had been born on the reserve. Between 1999 and 2003, just 35 percent of Aamjiwnaang's births were boys— "one of the steepest declines ever reported in the ratio of boys to girls," as *Men's Health* magazine revealed in a 2009 expose. Studies also found that 39 percent of Aamjiwnaang's women had had miscarriages, compared with roughly 20 percent in the general female population. Research published in 2013 showed that hormone-disrupting chemicals may be to blame, since women and children in the area had higher-than-average levels of PCBs in their bodies.<sup>10</sup>

I heard similar fertility horror stories in Mossville, Louisiana, a historic African-American town near Lake Charles. More than half of its two thousand families have left in recent years, fleeing the relentless pollution from their uninvited next-door neighbors: a network of massive industrial plants that convert the oil and gas pumped out of the Gulf into petroleum, plastics, and chemicals. Mossville is a textbook case of environmental racism: founded by freed slaves, it was once a safe haven for its residents, who enjoyed comfortable lives thanks in part to the rich hunting and fishing grounds in the surrounding wetlands. But beginning in the 1930s and 1940s, state politicians aggressively courted petrochemical and other industries with lavish tax breaks, and one giant plant after another set up shop on Mossville's doorstep, some just a few hundred feet from the clapboard homes. Today, fourteen chemical plants and refineries surround the town, including the largest concentration of vinyl production facilities in the U.S. Many of the hulking structures appear to be made entirely of metal pipes; spires in menacing chemical cathedrals. Roaring machinery spews emissions twenty-four hours a day, while floodlights and flares ignite the night sky."

Accidental leaks are commonplace and explosions are frequent. But even when factories are running smoothly, they spew approximately four million pounds of toxic chemicals into the surrounding soil, air, and groundwater each year.<sup>12</sup> Before arriving in Mossville, I had heard about cancer and respiratory illnesses, and I knew that some residents have dioxin levels three times the national average. What I was unprepared for were the stories of miscarriages, hysterectomies, and birth defects.

Debra Ramirez, who after years of struggle was finally forced to abandon her home and move to Lake Charles, described Mossville to me as "a woman's womb of chemicals. And we're dying in that womb." Having just left BP's aquatic miscarriage, I found the idea of a toxic womb particularly chilling. It became more so after Ramirez shared part of her own family's health

history. She had undergone a hysterectomy three decades earlier. So had all three of her sisters and her daughter. "It was just repeating from generation to generation," she said. Five hysterectomies in one family might have been bad genetic luck. But then Ramirez showed me footage from a town hall special that CNN's Dr. Sanjay Gupta had hosted on this "toxic town." On camera, Ramirez told the visiting correspondent that she had had a total hysterectomy, "like most young women do in this area." Taken, aback, Gupta asked the rest of the women in the room whether they had had hysterectomies—multiple women answered yes, nodding silently. And yet despite the many studies that have sought to document the impact of toxins on human health in Mossville, not one has looked closely at their impact on fertility.<sup>13</sup>

Perhaps this should come as no surprise. As a culture, we do a very poor job of protecting, valuing, or even noticing fertility—not just among humans but across life's spectrum. Indeed vast amounts of money and cutting-edge technology are devoted to practices that actively interfere with the life cycle. We have a global agricultural model that has succeeded in making it illegal for farmers to engage in the age-old practice of saving seeds, the building blocks of life, so that new seeds have to be repurchased each year. And we have a global energy model that values fossil fuels over water, where all life begins and without which no life can survive.

Our economic system, meanwhile, does not value women's reproductive labor, pays caregivers miserably, teachers almost as badly, and we generally hear about female reproduction only when men are trying to regulate it.

### **BP's Legacy and a "Handful of Nothing"**

If we tend to neglect the impact our industrial activities are having on human reproduction, the more vulnerable nonhumans fare significantly worse. A case in point is the risk assessment report that BP produced ahead of the Gulf Coast disaster. Before securing approval to drill in such deep water, the company had to produce a credible plan assessing what would happen to the ecosystem in the event of a spill, and what the company would do to respond. With the risk minimization that is one of the industry's hallmarks, the company confidently predicted that many adult fish and shellfish would be able to survive a spill whether by swimming away or by "metabolizing] hydrocarbons," while marine mammals like dolphins might experience some "stress."<sup>14</sup> Conspicuously absent from the report are the words "eggs," "larvae," "fetus," and "juvenile." In other words, the working assumption, once again, was that we live in a world where all creatures are already fully grown.

That, unsurprisingly, proved to be a tragic assumption. Just as was feared in the early days of the spill, one of the most lasting legacies of the BP disaster may well be an aquatic infertility crisis, one that in some parts of the Gulf could reverberate for decades if not longer. Two years after the spill, Donny Waters, a large-scale fisherman in Pensacola, Florida, who primarily catches red snapper and grouper, reported, "We don't see any significant numbers of small fish"—a reference to the young fish that would have been in their larval stage at the peak of the disaster. That had not yet impacted the commercial catch since small fish are released anyway. But Waters, who holds one of the largest individual fishing quotas in the Pensacola area, worried that when 2016 or 2017 rolls around—when those small fish would normally be reaching maturity—he and his colleagues will be hauling in their lines only to "come up with a handful of nothing."<sup>15</sup>

One year after the spill, shrimpers, crabbers, and oystermen working in some of the most affected parts of Louisiana and Mississippi also began to report sharply reduced catches—and in some areas, that female crabs were relatively scarce, and that many of those caught during spawning season didn't have any eggs. (Some shellfish catches in these areas have shown improvement, but reports of missing or egg-less female crabs have persisted; similar signs of reproductive impairment have been observed in the shrimp and oyster fisheries.)<sup>16</sup>

The precise contribution of the spill to these fertility problems remains unclear as much of the research is still incomplete—but a growing body of scientific data adds weight to anecdotal reports from fishing crews. In one study, for instance, researchers sampled oysters after the spill and found alarmingly elevated concentrations of three heavy metals contained in petroleum—with 89 percent of the oysters also displaying a form of metaplasia, or stress-related tissue abnormality that is known to interfere with reproduction. Another study, this one by researchers at the Georgia Institute of Technology, tested the impact of BP oil mixed with Corexit on rotifers—microscopic animals at the bottom of the food web—which "provide food for baby fish, shrimp and crabs in estuaries." It found that even tiny amounts of the mixture "inhibited rotifer egg hatching by 50 percent."<sup>17</sup>

Perhaps most worrying are the findings of Andrew Whitehead, a biology professor at the University of California, Davis, who has conducted a series of studies with colleagues on the impact of BP's oil on one of the most abundant fish in the Gulf marshes, the minnow-sized killifish. He found that when killifish embryos were exposed to sediments contaminated with BP oil (including sediment samples collected over a year after the spill), "these embryos are getting whacked. . . . They're not growing, developing properly, they're not hatching out properly. They've got cardiovascular system developmental problems, their hearts aren't forming properly."<sup>18</sup>

Missing fish don't tend to make the news; for one thing, there are no pictures, just a "handful of nothing," as Waters feared. But that is decidedly not the case when baby dolphins start dying en masse, which is what happened in early 2011. In the month of February alone, NOAA's National Marine Fisheries Service reported that thirty-five dead baby dolphins had been collected on Gulf Coast beaches and in marshes—an eighteen-fold increase from the usual number (only two dead baby dolphins are found in a typical February). By the end of April 2014, 235 baby bottlenose dolphins had been discovered along the Gulf Coast, a staggering figure since scientists estimate that the number of cetacean corpses found on or near shore represents only 2 percent of the "true death toll"; the rest are never found.<sup>19</sup>

After examining the dolphins, NOAA scientists discovered that some of the calves had been stillborn, while others died days after birth. "Something has happened that these animals are now either aborting or the animals are not fit enough to survive," said Moby Solangi, the executive director of the Institute for Marine Mammal Studies (IMMS) in Gulfport, Mississippi, and one of the scientists investigating the incidents.<sup>20</sup> (The dolphin die-off did not restrict itself to the young. By the end of April 2014, over one thousand dead dolphins, of all ages, had been discovered along the Gulf Coast, part of what NOAA termed an "unusual mortality event." Those numbers only scratch the surface of the death toll).

The deaths took place during the first birthing season for bottlenose dolphins since the BP disaster. That means that for much of their twelvemonth gestation period, these calves were developing inside mothers who very likely swam in waters polluted with oil and chemical dispersant and who may well have inhaled toxic fumes when they surfaced to breathe. Metabolizing hydrocarbons is hard work and could have made the dolphins significantly more vulnerable to bacteria and diseases. Which might explain why, when NOAA-led scientists examined twenty-nine dolphins off the Louisiana coast, they found high levels of lung disease, as well as strikingly low levels of cortisol, an indication of adrenal insufficiency and a severely compromised ability to respond to stress. They also found one dolphin that was pregnant with a five-month-old "nonviable" fetus—an extremely rare occurrence in dolphins, indeed one undocumented in the scientific literature up until this incident. "I've never seen such a high prevalence of very sick animals—and with unusual conditions such as the adrenal hormone abnormalities," said Lori Schwacke, lead author of a paper on these findings that was published in late 2013. Commenting on the study, NOAA warned that the dolphins would "likely" face "reduced survival and ability to reproduce."<sup>21</sup>

The spill wasn't the only added stress these animals faced in this fateful period. The winter of 2010-2011 saw an abnormally heavy snowfall in the region, a phenomenon scientists have linked to climate change. When the huge snowpack melted, it sent torrents of freshwater into the Gulf of Mexico, where it not only dangerously lowered salinity and temperature levels for mammals accustomed to warm saltwater, but likely combined with the oil and dispersant to create an even more dangerous mess for dolphins and other cetaceans. As Ruth Carmichael, senior marine scientist at the Dauphin Island Sea Lab, explains, "These freight trains of cold fresh water may have assaulted [the dolphins], essentially kicking them when they were already down."<sup>22</sup>

This is the one-two punch of an economy built on fossil fuels: lethal when extraction goes wrong and the interred carbon escapes at the source; lethal when extraction goes right and the carbon is successfully released into the atmosphere. And catastrophic when these two forces combine in one ecosystem, as they did that winter on the Gulf Coast.

### Disappearing Babies in a Warming World

In species after species, climate change is creating pressures that are depriving life-forms of their most essential survival tool: the ability to create new life and carry on their genetic lines. Instead, the spark of life is being extinguished, snuffed out in its earliest, most fragile days: in the egg, in the embryo, in the nest, in the den.

For sea turtles—an ancient species that managed to survive the asteroid collision that killed the dinosaurs—the problem is that the sand in which females bury their eggs is becoming too hot. In some cases, eggs are reaching lethal temperatures and many eggs aren't hatching at all, or else they are hatching but mostly as females. At least one species of coral is poised for a similar climate-related reproductive crisis: when water temperature reaches above 34 degrees Celsius (93 Fahrenheit), egg fertilization stops. Meanwhile, high temperatures can make reef-building coral so hungry that they reabsorb their own eggs and sperm.<sup>21</sup>

For oysters along the Pacific Coast of Oregon and Washington State, the problem in recent years is that the water is acidifying with such alarming rapidity that larvae are unable to form their tiny shells in the earliest days of life, leading to mass die-offs. Richard Feely, an oceanographer with the National Oceanic and Atmospheric Administration, explains that before the die-offs began, "What we knew at the time was that many organisms as adults are sensitive to acidification. What we did not know is that the larval stages of those organisms are much more sensitive." By 2014, the same problem was leading to a collapse of scallops off British Columbia. One of the largest scallop farming operations on the coast reported that some ten million mollusks had died in its operation alone.<sup>24</sup>

On land, climate change is also hitting the very young first and worst. In West Greenland, for instance, there has been a dramatic decrease in birth and survival rates of caribou calves. It seems that rising temperatures have changed the growing patterns of plants that are the source of critical energy for caribou calves, as well as for their mothers during reproduction and lactation. Populations of songbirds like the pied flycatcher, meanwhile, are collapsing in some parts of Europe because the caterpillars that parents depend upon to feed their young are hatching too early. In Maine, Arctic tern chicks are starving to death for similar reasons: they rely on small fish that have fled for colder waters. Meanwhile, there are reports that around Canada's Hudson Bay, birth dens of polar bears are collapsing in the thawing permafrost, which leaves tiny cubs dangerously exposed.<sup>25</sup>

As I delved into the impacts of climate change on reproduction and youth, I came across many more such examples of bottom-up threats, endangering the youngest members of species ranging from wolverine cubs (whose parents are having trouble storing food in ice) to peregrine falcon chicks (which are catching hypothermia and drowning in unusual downpours) to Arctic ring seal pups (whose snowy birthing dens, like those of polar bears, are threatened).<sup>26</sup> Once

this pattern is recognized, it seems obvious: of course the very young are much more vulnerable than adults; of course even the most subtle environmental changes will hurt them more; and of course fertility is one of the first functions to erode when animals are under stress. And yet what struck me most in this research was the frequency with which all this came as a surprise, even to the experts in the field.

In a way, these various oversights make sense. We are used to thinking about extinction as a process that affects a species or cluster of species of every age group—the asteroid that wipes out the dinosaurs, or the way that our ancestors hunted a range of animals until they were all gone. And we still extinguish species that way, of course. But in the age of fossil fuels, we can render the earth less alive by far more stealthy means: by interfering with the capacity of adults to reproduce in the first place, and by making the first days of life simply too difficult to survive. No corpses, just an absence— more handfuls of nothing.

## Fallow Time

A few months after I stopped going to the fertility clinic, a friend recommended that I see a naturopathic doctor who had helped several people she knew to get pregnant. This practitioner had her own theories about why so many women without an obvious medical reason were having trouble conceiving, and they were radically different from the ones I had come across so far.

Carrying a baby is one of the hardest physical tasks we can ask of ourselves, she pointed out, and if our bodies decline the task, it is often a sign that they are facing too many other demands—high-stress work that keeps us in a near constant state of "fight or flight," perhaps, or the physical stress of having to metabolize toxins or allergens, or just the stresses of modern life (or some combination of all of the above). With the body in overdrive fending off these real and perceived threats, it can start sending signals that it does not have the excess energy necessary to build and nourish a whole new life.

Most fertility clinics use drugs and technology to override this bodily resistance, and they work for a lot of people. But if they do not (and they often do not) women are frequently left even more stressed, with their hormones more out of whack, than when they began the process. The nature-path proposed an approach that was in every way the mirror opposite: try to figure out what might be overtaxing my system and then remove those things, and hope that a healthier, more balanced endocrine system will start sending some more welcoming signals to babies-to-be.

After a series of tests, I was diagnosed with a whole mess of allergies I didn't know I had, as well as with adrenal insufficiency and low cortisol levels (the same diagnosis, weirdly, that the NOAA scientists made for the Gulf Coast dolphins). The doctor asked me a lot of questions about my lifestyle, including how many hours I had spent in the air over the past year. "Why," I asked warily, knowing that the answer was going to be ugly. "Because of the radiation. There have been some studies done with flight attendants that show it might not be good for fertility." Great. Turns out flying was not just poisoning the atmosphere, it may have been poisoning me too.<sup>27</sup>

I admit that I was far from convinced that this new approach would result in a pregnancy, or even that the science behind it was wholly sound. And I was keenly aware that attributing infertility to female stress has an extensive and inglorious history. "Just relax," women who cannot conceive have long been told (in other words: it's all in your head/all your fault). Then again, the doctors at the fertility factory had clearly been engaged in their own version of highly lucrative guesswork, and after that experience, this doctor was a tonic.<sup>28</sup> (New research published in May 2014 in the journal *Human Reproduction* shows a strong connection between stress and infertility. The study followed roughly five hundred women in the U.S. as they were trying to conceive, none of them with known fertility problems. It discovered that women whose

saliva measured high for alpha-amylase—a biomarker for stress—were twice as likely to be diagnosed as infertile as those with low levels). Finally someone was trying to figure out ' *why* my infertility was happening, instead of trying to force my body to do something it clearly was rejecting. As for the downsides, they reminded me of a popular cartoon about global warming: A man stands up at a climate summit and asks, "What if it's a big hoax and we create a better world for nothing?" If all this adrenal stuff turned out to be a big hoax, the worst thing that could happen is that I'd end up healthier and less stressed out.

So I did it all. The yoga, the meditation, the dietary changes (the usual wars on wheat, gluten, dairy, and sugar—as well as various more esoteric odds and ends). I went to acupuncture and drank bitter Chinese herbs, and my kitchen counter became a gallery of powders and supplements. I also left my urban home in Toronto and moved to rural British Columbia, a ferry ride from the nearest city and a twenty-minute drive to the nearest hardware store. This is the part of the world where my parents live, where my grandparents are buried, and where I have always gone to write and rest. I would see what it was like to live there full-time.

Gradually, I learned to identify a half dozen birds by sound, and the sea mammals by the ripples that appeared on the water's surface. I even caught myself appreciating beautiful moments without simultaneously mourning their loss. The golden card in my wallet attesting to my frequent flyer status expired for the first time in a decade, and I was glad.

I still traveled for research, though—and when I did, I often noticed parallels between my new doctor's theories about infertility and some of the ideas I was encountering about the changes humanity must make if we are to avoid collapse. Her advice had pretty much boiled down to this: before you can take care of another human being you have to take care of yourself. In a sense she was saying that I had to give myself some fallow time, as opposed to the mechanistic "push harder" approach that dominates Western medicine.

I thought of this advice when I left my hideout and traveled to the Land Institute in Salina, Kansas, one of the most exciting living laboratories for cutting-edge, agro-ecological farming methods. Wes Jackson, the founder and president of the center, says that he is trying to solve what he calls "the 10,000-year-old problem of agriculture."<sup>29</sup> That problem, in essence, is that ever since humans started planting seeds and tilling fields, they have been stripping the soil of its fertility.

Without human interference, plants grow in different varieties next to one another and as perennials, reseeding themselves year after year, with their roots staying put and growing ever longer and deeper. This combination of diversity and perennialism keeps soil healthy, stable, and fertile: the roots hold the soil in place, the plants allow rain water to be more safely slowly absorbed, and different plants provide different fertility functions (some, like legumes and clover, are better at fixing nitrogen, critical to forming the building blocks of plant life), while diversity controls pests and invasive weeds.

It's a self-sustaining cycle, with decomposing plants serving as natural fertilizer for new plants and the life cycle being constantly renewed. Maintaining this cycle, according to the farmer and philosopher Wendell Berry, must be the centerpiece of humanity's relationship with nature. "The problem of sustainability is simple enough to state," he says. "It requires that the fertility cycle of birth, growth, maturity, death, and decay . . . should turn continuously in place, so that the law of return is kept and nothing is wasted."<sup>30</sup> Simple enough: respect fertility, keep it going.

But when humans started planting single crops that needed to be replanted year after year, the problem of fertility loss began. The way industrial agriculture deals with this problem is well known: irrigate heavily to make up for the fact that annual plants do a poor job of retaining moisture (a growing problem as fresh water becomes more scarce), and lay on the chemicals, both to fertilize and ward off invasive pests and weeds.

This in turn creates a host of new environmental and health problems, including massive aquatic dead zones caused by agricultural runoff. In other words, rather than solving the fertility problem in the soil, we have simply moved it, transforming a land-based crisis into an ocean-based one. And the chain of infertility is longer still because some of the chemicals used in industrial farming are endocrine disruptors such as the herb killer atrazine, which research shows causes sterility in amphibians, fish, reptiles, and rats—as well as triggering bizarre spontaneous sex changes in male frogs. And these same chemicals have been linked to increased incidence of birth defects and miscarriages in humans, though the manufacturer of atrazine disputes all these links. Honeybees, meanwhile, our most critical natural pollinators, are under threat around the world—another victim, many experts say, of agriculture's chemical dependency.<sup>31</sup>

Many traditional agricultural societies have developed methods to maintain soil fertility despite planting annual crops. The maize-growing cultures of Mesoamerica, for example, allowed fields to lie fallow so they could regenerate and incorporated nitrogen-fixing legumes such as beans into mixtures of crops grown side by side. These methods, which mimic the way similar plants grow in the wild, have succeeded in keeping land fertile for thousands of years. Healthy soil also has the added bonus of sequestering carbon (helping to control emissions), and polycultures are less vulnerable to being wiped out by extreme weather.<sup>32</sup>

Wes Jackson and his colleagues at the Land Institute are taking this approach one step further: they are trying to remake the way industrial societies produce grains by breeding perennial varieties of wheat, wheatgrass, sorghum, and sunflowers that do not need to be replanted every year—just like the original tall grasses that dominated the prairie landscape before large-scale agriculture began. "Our goal is to fashion an agriculture as sustainable as the native ecosystems it displaced," the institute's literature explains, "to find a way of growing crops that rewards the farmer and the landscape more than the manufacturers of external inputs. We envision an agriculture that not only protects irreplaceable soil, but lessens our dependence on fossil fuels and damaging synthetic chemicals."<sup>33</sup>

And it is beginning to work: when I first visited the institute in 2010, the gift shop had started selling the first batch of flour made from perennial wheatgrass that Jackson and his team have domesticated and dubbed Kernza. When I returned a year later, the Southern Plains were in the grip of a devastating crop-destroying drought. Texas was having its driest year on record, with wheat, corn, and sorghum down 50-60 percent and agricultural losses topping \$7 billion;<sup>34</sup> And yet the test sorghum field at the Land Institute was robust and healthy, the plants' long roots able to hold onto even tiny amounts of water. It was the only patch of green for miles around.

It was right around then that my son was conceived. For the first few months, the hardest part of the pregnancy was believing that everything really was normal and healthy. No matter how many tests came back with reassuring results, I stayed braced for tragedy. What helped most was hiking, and during the final anxious weeks before the birth, I would calm my nerves by walking for as long as my sore hips would let me on a well-groomed trail along a pristine creek. The stream begins near the top of a snowcapped mountain and the clear water rushes down a waterfall, gathers in dozens of pools, and flows through rapids until it finally empties into the Pacific.

On these hikes, I would keep my eyes open for silvery salmon smolts making their journey to the sea after months of incubation in shallow estuaries. And I would picture the cohos, pinks, and chums swimming with all their might through the rapids and falls, determined to reach the spawning grounds where they were born. This was my son's determination, I would tell myself. He was clearly a fighter, having managed to make his way to me despite the odds; he would find a way to be born safely too.

You can't ask for a better symbol of the tenacity of life than the Pacific salmon. To reach their spawning grounds, cohos will leap up massive waterfalls like deranged kayakers in reverse, dodging eagles and grizzly bears. At the end of their lives, salmon will expend their last life force to complete their mission. Salmon fry must go through a dramatic physical transformation (smoking) to prepare their bodies for the transition from freshwater to the oceans, where they will live out their lives until it is their turn to make the journey upstream.

But these triumphant feats of biology are only one part of the story of regeneration. Because as everyone who lives in salmon country knows, sometimes the autumn streams are eerily empty, filled with nothing but dead leaves, and perhaps one or two mottled fish. The salmon are indeed our Olympic athletes, their determination one of the planet's most powerful expressions of the drive to carry on the life cycle—but they are not invincible. Their strength can be defeated by overfishing, by fish farming operations that spread sea lice that kill young salmon in droves, by warming waters that scientists believe may threaten their food supply, by careless logging operations that leave spawning streams clogged with debris, by concrete dams that defy even the most acrobatic cohos. And of course they can be stopped dead in their tracks by oil spills and other industrial accidents.

All of which is why salmon have disappeared from about 40 percent of their historical range in the Pacific Northwest and several populations of coho, chinook, and sockeye are under perpetual threat and at risk of extinction.<sup>35</sup> To know where these kinds of numbers lead, we need only look to New England and Continental Europe, where commercial runs of Atlantic salmon have disappeared from the rivers where they once were plentiful. Like humans, salmon can overcome an awful lot—but not everything.

Which is why the happy ending to my own story still makes me uneasy, and feels incomplete. I know that for some, my fertility saga seems to reinforce the idea that human resilience will always conquer in the end, but that's not what it feels like. I don't know why this pregnancy succeeded any more than I know why my earlier pregnancies failed—and neither do my doctors, whether of the high-tech or low-tech varieties. Infertility is just one of the many areas in which we humans are confronted with our oceans of ignorance. So mostly I feel lucky—like I could just as easily have failed, no matter how serene my life became, having pushed my system too far. And it's also possible that I could have ended up with a cute baby picture on the wall of the frenetic fertility factory if I had been willing to keep upping the technological ante.

I suppose a part of me is still in that oiled Louisiana marsh, floating in a sea of poisoned larvae and embryos, with my own ill-fated embryo inside me. It's not self-pity that keeps me returning to that sad place. It's the conviction that there is something valuable in the body-memory of slamming up against a biological limit—of running out of second, third, and fourth chances—something that we all need to learn. Hitting the wall didn't dispel my belief in healing and recovery. It just taught me that these gifts require a special kind of nurturing, and a constant vigilance about the limits beyond which life cannot be pushed.

Because the truth is that humans *are* marvelously resilient, capable of adapting to all manner of setbacks. We are built to survive, gifted with adrenaline and embedded with multiple biological redundancies that allow us the luxury of second, third, and fourth chances. So are our oceans. So is the atmosphere. But surviving is not the same as thriving, not the same as living well. And as we have seen, for a great many species it's not the same as being able to nurture and produce new life. Just because biology is full of generosity does not mean its forgiveness is limitless. With proper care, we stretch and bend amazingly well. But we break too—our individual bodies, as well as the communities and ecosystems that support us.

### **Coming Back to Life**

In early 2013, I came across a speech by Mississauga Nishnaabeg writer and educator Leanne Simpson, in which she describes her people's teachings and governance structures like

this: "Our systems are designed to promote more life."<sup>36</sup> The statement stopped me in my tracks. It struck me that this guiding purpose was the very antithesis of extractivism, which is based on the premise that life can be drained indefinitely, and which, far from promoting future life, specializes in turning living systems into garbage, whether it's the piles of "overburden" lining the roads in the Alberta tar sands, or the armies of discarded people roving the world looking for temporary work, or the particulates and gases that choke the atmosphere that were once healthy parts of ecosystems. Or, indeed, the cities and towns turned to rubble after being hit by storms made more powerful by the heat those gases are trapping.

After listening to the speech, I wrote to Simpson and asked whether she would be willing to tell me more about what lay behind that statement. When we met at a Toronto cafe, I could tell that Simpson, in a black rocker T-shirt and motorcycle boots, was wary of having her own mind mined by yet another white researcher, having devoted a great deal of her life to collecting, translating, and artistically interpreting her people's oral histories and stories.

We ended up having a long, wide-ranging conversation about the difference between an extractivist mind-set (which Simpson describes bluntly as "stealing" and taking things "out of relationship") and a regenerative one. She described Anishinaabe systems as "a way of living designed to generate life, not just human life but the life of all living things." This is a concept of balance, or harmony, common to many Indigenous cultures and is often translated to mean "the good life." But Simpson told me that she preferred the translation "continuous rebirth," which she first heard from fellow Anishinaabe writer and activist Winona LaDuke.<sup>37</sup>

It's understandable that we associate these ideas today with an Indigenous worldview: it is primarily such cultures that have kept this alternate way of seeing the world alive in the face of the bulldozers of colonialism and corporate globalization. Like seed savers safeguarding the biodiversity of the global seed stock, other ways of relating to the natural world and one another have been safeguarded by many Indigenous cultures, based partly on a belief that a time will come when these intellectual seeds will be needed and the ground for them will become fertile once again.

One of the most important developments in the emergence of what I have been referring to as Blockadia is that, as this movement has taken shape, and as Indigenous people have taken on leadership roles within it, these long protected ways of seeing are spreading in a way that has not occurred for centuries. What is emerging, in fact, is a new kind of reproductive rights movement, one fighting not only for the reproductive rights of women, but for the reproductive rights of the planet as a whole—for the decapitated mountains, the drowned valleys, the clear-cut forests, the fracked water tables, the strip-mined hillsides, the poisoned rivers, the "cancer villages." All of life has the right to renew, regenerate, and heal itself.

Based on this principle, countries like Bolivia and Ecuador—with large Indigenous populations—have enshrined the "rights of Mother Earth" into law, creating powerful new legal tools that assert the right of ecosystems not only to exist but to "regenerate."<sup>38</sup> (When Ecuador adopted a new constitution in 2008, it became the first country to enshrine the rights of nature in law. Article 71 of the country's constitution states: "Nature or *Pachamama*, where the life is created and reproduced, has as a right that its existence is integrally respected as well as the right of the maintenance and regeneration of its vital cycles, structures, functions and evolutionary processes. Every person, community, people or nationality can demand from the public authority that these rights of nature are fulfilled." Similar principles were enshrined in the "Peoples Agreement" of the World People's Conference on Climate Change and the Rights of Mother Earth, which was adopted by 30,000 members of international civil society gathered in Cochabamba, Bolivia, in April 2010. Noting that, "the regenerative capacity of the planet has been already exceeded," the agreement asserts that the earth has "the right to regenerate its bio-capacity and to continue its vital cycles and processes free of human alteration.").

The gender essentialism of the term still makes some people uncomfortable. But it seems to me that the specifically female nature is not of central importance. Whether we choose to see the earth as a mother, a father, a parent, or an ungendered force of creation, what matters is that we are acknowledging that we are not in charge, that we are part of a vast living system on which we depend. The earth, wrote the great ecologist Stan Rowe, is not merely "resource" but "source."

These legal concepts are now being adopted and proposed in non-Indigenous contexts, including in North America and elsewhere, where increasingly, communities trying to protect themselves from the risks of extreme extraction are passing their own "rights of nature" ordinances. In 2010 the Pittsburgh City Council passed such a law, explicitly banning all natural gas extraction and stating that nature has "inalienable and fundamental rights to exist and flourish" in the city. A similar effort in Europe is attempting to make ecocide a crime under international law. The campaign defines ecocide as "the extensive damage to, destruction of or loss of ecosystem(s) of a given territory, whether by human agency or by other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been or will be severely diminished."<sup>39</sup>

As Indigenous-inspired ideas have spread in these somewhat surprising contexts, something else is happening too: many people are remembering their own cultures' stewardship traditions, however deeply buried, and recognizing humanity's role as one of life promotion. The notion that we could separate ourselves from nature, that we did not need to be in perpetual partnership with the earth around us, is, after all, a relatively new concept, even in the West. Indeed it was only once humans came up with the lethal concept of the earth as an inert machine and man its engineer, that some began to forget the duty to protect and promote the natural cycles of regeneration on which we all depend.

The good news is that not everybody agreed to forget. Another of the more interesting and unexpected side effects of the extreme energy frenzy is that, faced with heightened threats to collective safety, these old ideas are reasserting themselves—cross-pollinating, hybridizing, and finding applications in new contexts.

In Halkidiki, Greece, for instance, as villagers defend their land against open-pit gold mining, the secret weapon has been the intergenerational character of the struggle—teenage girls in skinny jeans and big sunglasses standing side by side with their black-clad grandmothers in orthopedic shoes. This is something new: before the miners threatened the mountain and the streams, many old people had been forgotten, parked at home in front of their TVs, stuffed away like outdated cell phones. But as the villages organized, local young people discovered that, though they were expert at certain things, like flash-mob-style organizing and getting their messages out on social media, their grandparents—who had survived wars and occupations—knew a great deal more about living and working in large groups. Not only could they cook for fifty people (an important skill on the barricades), but they remembered a time when agriculture was done collectively, and were able to help their children and grandchildren believe that it was possible to live well without tearing up the land.

In "young" countries like Canada, the United States, Australia, and New Zealand, which tend to have myths rather than memories, this remembering process is far more complex. For descendants of settlers and newer immigrants, it begins with learning the true histories of where we live—with reading treaties, for instance, and coming to terms with how we ended up with what we have, however painful. And yet Mike Scott, the goat rancher and environmentalist at the forefront of Montana's anti-coal fight, says that the process of Indigenous and non-Indigenous people working closely together "has reawakened a worldview in a lot of people."<sup>40</sup>

The deep sense of interdependence with the natural world that animates rural Blockadia struggles from Greece to coastal British Columbia is, of course, far less obvious in the densely populated cities where so many of us live and work: where our reliance on nature is well hidden by highways, pipes, electrical lines, and overstocked supermarkets. It is only when something in

this elaborately insulated system cracks, or comes under threat, that we catch glimpses of how dependent and vulnerable we really are.

And yet these cracks are appearing with greater regularity. At a time when unprecedented wildfires engulf suburban homes in Melbourne, when waters from the rising Thames flood homes in London commuter towns, and when Superstorm Sandy transforms the New York subway into a canal system, the barriers that even the most urban and privileged among us have erected to hold back the natural world are clearly starting to break down.

Sometimes it is extreme extraction that breaks down those barriers, as its tentacles creep into our most modern cities—with fracking in backyards in Los Angeles and proposed tar sands pipelines running through cities like Toronto. Sydney's residents had little reason to think about where their drinking water was coming from—but when it looked like the source of the Australian city's water was going to get fracked, a great many people educated themselves fast. In truth, we never lost our connections with nature—they were always there, in our bodies and under our paved lives. A great many of us just forgot about them for a while.

As communities move from simply resisting extractivism to constructing the world that must rise in its rubble, protecting the fertility cycle is at the heart of the most rapidly multiplying models, from permaculture to living buildings to rainwater harvesting. Again and again, linear, one-way relationships of pure extraction are being replaced with systems that are circular and reciprocal. Seeds are saved instead of purchased. Water is recycled. Animal manure, not chemicals, is used as fertilizer, and so on. There are no hard-and-fast formulas, since the guiding principle is that every geography is different and our job, as Wes Jackson says (citing Alexander Pope), is to "consult the genius of the place."<sup>41</sup> There is, however, a recurring pattern: systems are being created that require minimal external inputs and produce almost no waste—a quest for homeostasis that is the opposite of the Monster Earth that the would-be geoengineers tell us we must learn to love.

And contrary to capitalism's drift toward monopoly and duopoly in virtually every arena, these systems mimic nature's genius for built-in redundancy by amplifying diversity wherever possible, from more seed varieties to more sources of energy and water. The goal becomes not to build a few gigantic green solutions, but to infinitely multiply smaller ones, and to use policies—like Germany's feed-in tariff for renewable energy, for instance—that encourage multiplication rather than consolidation. The beauty of these models is that when they fail, they fail on a small and manageable scale—with backup systems in place. Because if there is one thing we know, it's that the future is going to have plenty of shocks.

Living nonextractively does not mean that extraction does not happen: all living things must take from nature in order to survive. But it does mean the end of the extractivist mindset—of taking without caretaking, of treating land and people as resources to deplete rather than as complex entities with rights to a dignified existence based on renewal and regeneration. Even such traditionally destructive practices as logging can be done responsibly, as can small-scale mining, particularly when the activities are controlled by the people who live where the extraction is taking place and who have a stake in the ongoing health and productivity of the land. But most of all, living nonextractively means relying overwhelmingly on resources that can be continuously regenerated: deriving our food from farming methods that protect soil fertility; our energy from methods that harness the ever-renewing strength of the sun, wind, and waves; our metals from recycled and reused sources.

These processes are sometimes called "resilient" but a more appropriate term might be "regenerative." Because resilience—though certainly one of nature's greatest gifts—is a passive process, implying the ability to absorb blows and get back up. Regeneration, on the other hand, is active: we become full participants in the process of maximizing life's creativity.

This is a far more expansive vision than the familiar eco-critique that stressed smallness and shrinking humanity's impact or "footprint." That is simply not an option today, not without genocidal implications: we are here, we are many, and we must use our skills to act. We can, however, change the nature of our actions so that they are constantly growing, rather than extracting life. "We can build soil, pollinate, compost and decompose," Gopal Dayaneni, a grassroots ecologist and activist with the Oakland, California, based Movement Generation, told me. "We can accelerate, simply through our labor, the restoration and regeneration of living systems, if we engage in thoughtful, concerted action. We are actually the keystone species in this moment so we have to align our strategies with the healing powers of Mother Earth—there is no getting around the house rules. But it isn't about stopping or retreating. It's about aggressively applying our labor toward restoration."<sup>42</sup>

That spirit is already busily at work promoting and protecting life in the face of so many life-negating and life-forgetting threats. It has even reached the creek where I used to take hikes during my pregnancy. When I first discovered the trail, I had thought that the salmon that still swam in the stream were there purely thanks to the species' indomitable will. But as I met and spoke with locals on those walks, I learned that since 1992 the fish had been helped along by a hatchery a few kilometers upstream, as well as by teams of volunteers that worked to clear the water of logging debris and made sure there was enough shade to protect the young fry. Hundreds of thousands of pink, coho, chum, and chinook fry are released into nearby streams each year. It's a partnership of sorts between the fish, the forest, and the people who share this special piece of the world.

So about two months after my son was born, our little family went on a field trip to that hatchery, now being powered through micro turbines and geothermal. Though he was so small he could barely see over the sling, I wanted him to meet some of the baby salmon that had been so important to me before he was born. It was fun: we peered together into the big green tanks where the young fish were being kept safe until they grew strong enough to protect themselves. And we went home with a "salmon alphabet" poster that still hangs in his room ("s" is for smolt).

This was not a fish farm or a fertility factory—nothing was being created from scratch or forced. It was just a helping hand, a boost to keep the fertility cycle going. And it's an expression of the understanding that from here on, when we take, we must not only give back, but we must also take care.

## Conclusion

### The Leap Years: Just Enough Time for Impossible

*"We as a nation must undergo a radical revolution of values. We must rapidly begin the shift from a 'thing-oriented society' to a 'person-oriented society.' When machines and computers, profit motives and property rights, are considered more important than people, the giant triplets of racism, extreme materialism, and militarism are incapable of being conquered."*

-Martin Luther King Jr., "Beyond Vietnam," 1967<sup>1</sup>

*"Developed countries have created a global crisis based on a flawed system of values. There is no reason we should be forced to accept a solution informed by that same system."*

-Marlene Moses, Ambassador to the U.N. for Nauru, 2009<sup>2</sup>

In December 2012, Brad Werner—a complex systems researcher with pink hair and a serious expression—made his way through the throng of 24,000 earth and space scientists at the Fall Meeting of the American Geophysical Union in San Francisco. That year's conference had some big-name participants, from Ed Stone of NASA's Voyager project, explaining a new milestone on the path to interstellar space, to the filmmaker James Cameron, discussing his adventures in deep-sea submersibles. But it was Werner's own session that was attracting much of the buzz. It was titled "Is Earth F\*\*ked?" (full title: "Is Earth F\*\*ked? Dynamical Futility of Global Environmental Management and Possibilities for Sustainability via Direct Action Activism").<sup>3</sup>

Standing at the front of the conference room, the University of California, San Diego professor took the crowd through the advanced computer model he was using to answer that rather direct question. He talked about system boundaries, perturbations, dissipation, attractors, bifurcations, and a whole bunch of other stuff largely incomprehensible to those of us uninitiated in complex systems theory. But the bottom line was clear enough: global capitalism has made the depletion of resources so rapid, convenient, and barrier-free that "earth-human systems" are becoming dangerously unstable in response. When a journalist pressed Werner for a clear answer on the "Is Earth f\*\*ked" question, he set the jargon aside and replied, "More or less."<sup>4</sup>

There was one dynamic in the model, however, that offered some hope. Werner described it as "resistance"—movements of "people or groups of people" who "adopt a certain set of dynamics that does not fit within the capitalist culture." According to the abstract for his presentation, this includes "environmental direct action, resistance taken from outside the dominant culture, as in protests, blockades and sabotage by Indigenous peoples, workers, anarchists and other activist groups." Such mass uprisings of people—along the lines of the abolition movement and the civil rights movement—represent the likeliest source of "friction" to slow down an economic machine that is careening out of control.<sup>5</sup>

This, he argued, is clear from history, which tells us that past social movements have "had tremendous influence on ... how the dominant culture evolved." It stands to reason, therefore, that "if we're thinking about the future of the earth, and the future of our coupling to the environment, we have to include resistance as part of that dynamics." And that, Werner said, is not a matter of opinion, but "really a geophysics problem."<sup>6</sup>

Put another way, only mass social movements can save us now. Because we know where the current system, left unchecked, is headed. We also know, I would add, how that system will deal with the reality of serial climate-related disasters: with profiteering, and escalating barbarism to segregate the losers from the winners. To arrive at that dystopia, all we need to do is keep barreling down the road we are on. The only remaining variable is whether some countervailing power will emerge to block the road, and simultaneously clear some alternate pathways to destinations that are safer. If that happens, well, it changes everything.

The movements explored in these pages—Blockadia's fast multiplying local outposts, the fossil fuel divestment/reinvestment movement, the local laws barring high-risk extraction, the bold court challenges by Indigenous groups and others—are early manifestations of this resistance. They have not only located various choke points to slow the expansion plans of the fossil fuel companies, but the economic alternatives these movements are proposing and building are mapping ways of living within planetary boundaries, ones based on intricate reciprocal relationships rather than brute extraction. This is the "friction" to which Werner referred, the kind that is needed to put the brakes on the forces of destruction and destabilization.

When I despair of the prospects for change, I think back on some of what I have witnessed in the five years of writing of this book. Admittedly, much of it is painful. From the young climate activist breaking down and weeping on my shoulder at the Copenhagen summit, to the climate change deniers at the Heartland Institute literally laughing at the prospect of extinction. From the country manor in England where mad scientists plotted to blot out the sun, to the stillness of the blackened marshes during the BP oil disaster. From the roar of the earth being ripped up to scrape out the Alberta tar sands, to the shock of discovering that the largest green group in the world was itself drilling for oil.

But that's not all I think about. When I started this journey, most of the resistance movements standing in the way of the fossil fuel frenzy either did not exist or were a fraction of their current size. All were significantly more isolated from one another than they are today. North Americans, overwhelmingly, did not know what the tar sands were. Most of us had never heard of fracking. There had never been a truly mass march against climate change in North America, let alone thousands willing to engage together in civil disobedience. There was no mass movement to divest from fossil fuels. Hundreds of cities and towns in Germany had not yet voted to take back control over their electricity grids to be part of a renewable energy revolution. My own province did not have a green energy program that was bold enough to land us in trade court. The environmental news out of China was almost exclusively awful. There was far less top-level research proving that economies powered by 100 percent renewable energy were within our grasp. Only the isolated few dared question the logic of economic growth. And few climate scientists were willing to speak bluntly about the political implications of their work for our frenzied consumer culture. All of this has changed so rapidly as I have been writing that I have had to race to keep up. Yes, ice sheets are melting faster than the models projected, but resistance is beginning to boil. In these existing and nascent movements we now have a clear glimpses of the kind of dedication and imagination demanded of everyone who is alive and breathing during climate change's "decade zero."

Because the carbon record doesn't lie. And what that record tells us is that emissions are still rising: every year we release more greenhouse gases than the year before, the growth rate increasing from one decade to the next—gases that will trap heat for generations to come, creating a world that is hotter, colder, wetter, thirstier, hungrier, angrier. So if there is any hope of reversing these trends, glimpses won't cut it; we will need the climate revolution playing on repeat, all day every day, everywhere.

Werner was right to point out that mass resistance movements have grabbed the wheel before and could very well do so again. At the same time, we must reckon with the fact that lowering global emissions in line with climate scientists' urgent warnings demands changes of a truly daunting speed and scale. Meeting science-based targets will mean forcing some of the most profitable companies on the planet to forfeit trillions of dollars of future earnings by leaving the vast majority of proven fossil fuel reserves in the ground.<sup>7</sup> It will also require coming up with trillions more to pay for zero-carbon, disaster-ready societal transformations. And let's take for granted that we want to do these radical things democratically and without a bloodbath, so violent, vanguardist revolutions don't have much to offer in the way of road maps.

The crucial question we are left with, then, is this: has an economic shift of this kind *ever* happened before in history? We know it can happen during wartime, when presidents and prime ministers are the ones commanding the transformation from above. But has it ever been demanded from below, by regular people, when leaders have wholly abdicated their responsibilities? Having combed through the history of social movements in search of precedents, I must report that the answer to that question is predictably complex, filled with "sort of"s and "almosts"—but also at least one "yes."

In the West, the most common precedents invoked to show that social movements really can be a disruptive historical force are the celebrated human rights movements of the past century—most prominently, civil, women's, and gay and lesbian rights. And these movements unquestionably transformed the face and texture of the dominant culture. But given that the challenge for the climate movement hinges on pulling off a profound and radical *economic* transformation, it must be noted that for these movements, the legal and cultural battles were always more successful than the economic ones.

The U.S. civil rights movement, for instance, fought not only against legalized segregation and discrimination but also *for* massive investments in schools and jobs programs that would close the economic gap between blacks and whites once and for all. In his 1967 book, *Where Do We Go from Here: Chaos or Community!*, Martin Luther King Jr. pointed out that, "The practical cost of change for the nation up to this point has been cheap. The limited reforms have been obtained at bargain rates. There are no expenses, and no taxes are required, for Negroes to share lunch counters, libraries, parks, hotels and other facilities with whites. . . . The real cost lies ahead. . . . The discount education given Negroes will in the future have to be purchased at full price if quality education is to be realized. Jobs are harder and costlier to create than voting rolls. The eradication of slums housing millions is complex far beyond integrating buses and lunch counters."<sup>8</sup>

And though often forgotten, the more radical wing of the second-wave feminist movement also argued for fundamental challenges to the free market economic order. It wanted women not only to get equal pay for equal work in traditional jobs but to have their work in the home caring for children and the elderly recognized and compensated as a massive unacknowledged market subsidy—essentially a demand for wealth redistribution on a scale greater than the New Deal.

But as we know, while these movements won huge battles against institutional discrimination, the victories that remained elusive were those that, in King's words, could not be purchased "at bargain rates." There would be no massive investments in jobs, schools, and decent homes for African Americans, just as the 1970s women's movement would not win its demand for "wages for housework" (indeed paid maternity leave remains a battle in large parts of the world). Sharing legal status is one thing; sharing resources quite another.

If there is an exception to this rule it is the huge gains won by the labor movement in the aftermath of the Great Depression—the massive wave of unionization that forced owners to share a great deal more wealth with their workers, which in turn helped create a context to demand ambitious social programs like Social Security and unemployment insurance (programs from which the majority of African American and many women workers were notably excluded). And in response to the market crash of 1929, tough new rules regulating the financial sector were introduced at real cost to unfettered profit making. In the same period, social movement pressure created the conditions for the New Deal and programs like it across the industrialized world. These made massive investments in public infrastructure— utilities, transportation systems, housing, and more—on a scale comparable to what the climate crisis calls for today.

If the search for historical precedents is extended more globally (an impossibly large task in this context, but worth a try), then the lessons are similarly mixed. Since the 1950s, several democratically elected socialist governments have nationalized large parts of their extractive sectors and begun to redistribute to the poor and middle class the wealth that had previously

hemorrhaged into foreign bank accounts, most notably Mohammad Mosaddegh in Iran and Salvador Allende in Chile. But those experiments were interrupted by foreign-sponsored coups d'etat before reaching their potential. Indeed postcolonial independence movements—which so often had the redistribution of unjustly concentrated resources, whether of land or minerals, as their core missions—were consistently undermined through political assassinations, foreign interference, and, more recently, the chains of debt-driven structural adjustment programs (not to mention the corruption of local elites).

Even the stunningly successful battle against apartheid in South Africa suffered its most significant losses on the economic equality front. The country's freedom fighters were not, it is worth remembering, only demanding the right to vote and move freely. They were also, as the African National Congress's official policy platform, the Freedom Charter, made clear, struggling for key sectors of the economy—including the mines and the banks—to be nationalized, with their proceeds used to pay for the social programs that would lift millions in the townships out of poverty. Black South Africans won their core legal and electoral battles, but the wealth accumulated under apartheid remained intact, with poverty deepening significantly in the post-apartheid era.<sup>9</sup>

There have been social movements, however, that have succeeded in challenging entrenched wealth in ways that are comparable to what today's movements must provoke if we are to avert climate catastrophe. These are the movements for the abolition of slavery and for Third World independence from colonial powers. Both of these transformative movements forced ruling elites to relinquish practices that were still extraordinarily profitable, much as fossil fuel extraction is today.

The movement for the abolition of slavery in particular shows us that a transition as large as the one confronting us today has happened before—and indeed it is remembered as one of the greatest moments in human history. The economic impacts of slavery abolition in the mid-nineteenth century have some striking parallels with the impacts of radical emission reduction, as several historians and commentators have observed. Journalist and broadcaster Chris Hayes, in an award-winning 2014 essay titled "The New Abolitionism," pointed out "the climate justice movement is demanding that an existing set of political and economic interests be forced to say goodbye to trillions of dollars of wealth" and concluded that "it is impossible to point to any precedent other than abolition."<sup>10</sup>

There is no question that for a large sector of the ruling class at the time, losing the legal right to exploit men and women in bondage represented a major economic blow, one as huge as the one players ranging from Exxon to Richard Branson would have to take today. As the historian Greg Grandin has put it, "In the realm of economics, the importance of slaves went well beyond the wealth generated from their uncompensated labor. Slavery was the flywheel on which America's market revolution turned—not just in the United States, but in all of the Americas." In the eighteenth century, Caribbean sugar plantations, which were wholly dependent on slave labor, were by far the most profitable outposts of the British Empire, generating revenues that far outstripped the other colonies. In *Bury the Chains*, Adam Hochschild quotes enthusiastic slave traders describing the buying and selling of humans as "the hinge on which all the trade of this globe moves" and "the foundation of our commerce . . . and first cause of our national industry and riches."<sup>11</sup>

While not equivalent, the dependency of the U.S. economy on slave labor—particularly in the Southern states—is certainly comparable to the modern global economy's reliance on fossil fuels (The reliance was certainly not limited to the Southern states: cutting-edge historical research has been exploding long-held perceptions that the North and South of the United States had distinct and irreconcilable economies in this period. In fact, Northern industrialists and Wall Street were far more dependent on and connected to slavery than has often been assumed, and even some crucial innovations in scientific management and accounting can be traced to the American plantation economy).

According to historian Eric Foner, at the start of the Civil War, "slaves as property were worth more than all the banks, factories and railroads in the country put together." Strengthening the parallel with fossil fuels, Hayes points out that "in 1860, slaves represented about 16 percent of the total household assets—that is, all the wealth—in the entire [United States], which in today's terms is a stunning \$10 trillion." That figure is very roughly similar to the value of the carbon reserves that must be left in the ground worldwide if we are to have a good chance of keeping warming below 2 degrees Celsius.<sup>12</sup>

But the analogy, as all acknowledge, is far from perfect. Burning fossil fuels is of course not the moral equivalent of owning slaves or occupying countries. (Though heading an oil company that actively sabotages climate science, lobbies aggressively against emission controls while laying claim to enough interred carbon to drown populous nations like Bangladesh and boil sub-Saharan Africa is indeed a heinous moral crime.) Nor were the movements that ended slavery and defeated colonial rule in any way bloodless: nonviolent tactics like boycotts and protests played major roles, but slavery in the Caribbean was only outlawed after numerous slave rebellions were brutally suppressed, and, of course, abolition in the United States came only after the carnage of the Civil War.

Another problem with the analogy is that, though the liberation of millions of slaves in this period—some 800,000 in the British colonies and four million in the U.S.—represents the greatest human rights victory of its time (or, arguably, any time), the economic side of the struggle was far less successful. Local and international elites often managed to extract steep payoffs to compensate themselves for their "losses" of human property, while offering little or nothing to former slaves. Washington broke its promise, made near the end of the Civil War, to grant freed slaves ownership of large swaths of land in the U.S. South (a pledge known colloquially as "40 acres and a mule"). Instead the lands were returned to former slave owners, who proceeded to staff them through the indentured servitude of sharecropping. Britain, as discussed, awarded massive paydays to its slave owners at the time of abolition. And France, most shockingly, sent a flotilla of warships to demand that the newly liberated nation of Haiti pay a huge sum to the French crown for the loss of its bonded workforce—or face attack.<sup>13</sup> Reparations, but in reverse.

The costs of these, and so many other gruesomely unjust extortions, are still being paid in lives, from Haiti to Mozambique. The reverse-reparations saddled newly liberated nations and people with odious debts that deprived them of true independence while helping to accelerate Europe's Industrial Revolution, the extreme profitability of which most certainly cushioned the economic blow of abolition. In sharp contrast, a real end to the fossil fuel age offers no equivalent consolation prizes to the major players in the oil, gas, and coal industries. Solar and wind can make money, sure. But by nature of their decentralization, they will never supply the kind of concentrated super-profits to which the fossil fuel titans have become all too accustomed. In other words, if climate justice carries the day, the economic costs to our elites will be real—not only because of the carbon left in the ground but also because of the regulations, taxes, and social programs needed to make the required transformation. Indeed, these new demands on the ultra rich could effectively bring the era of the footloose Davo's oligarch to a close.

### **The Unfinished Business of Liberation**

On one level, the inability of many great social movements to fully realize those parts of their visions that carried the highest price tags can be seen as a cause for inertia or even despair. If they failed in their plans to usher in a more equitable economic system, how can the climate movement hope to succeed?

There is, however, another way of looking at this track record: these economic demands—for basic public services that work, for decent housing, for land redistribution—represent nothing less than the unfinished business of the most powerful liberation movements of the past two centuries, from civil rights to feminism to Indigenous sovereignty. The massive global investments required to respond to the climate threat—to adapt humanely and equitably to the heavy weather we have already locked in, and to avert the truly catastrophic warming we can still avoid—is a chance to change all that; and to get it right this time. It could deliver the equitable redistribution of agricultural lands that was supposed to follow independence from colonial rule and dictatorship; it could bring the jobs and homes that Martin Luther King dreamed of; it could bring jobs and clean water to Native communities; it could at last turn on the lights and running water in every South African township. Such is the promise of a Marshall Plan for the Earth.

The fact that our most heroic social justice movements won on the legal front but suffered big losses on the economic front is precisely why our world is as fundamentally unequal and unfair as it remains. Those losses have left a legacy of continued discrimination, double standards, and entrenched poverty—poverty that deepens with each new crisis. But, at the same time, the economic battles the movements *did* win are the reason we still have a few institutions left—from libraries to mass transit to public hospitals—based on the wild idea that real equality means equal access to the basic services that create a dignified life. Most critically, all these past movements, in one form or another, are still fighting today—for full human rights and equality regardless of ethnicity, gender, or sexual orientation; for real decolonization and reparation; for food security and farmers' rights; against oligarchic rule; and to defend and expand the public sphere.

So climate change does not need some shiny new movement that will magically succeed where others failed. Rather, as the furthest-reaching crisis created by the extractivist worldview, and one that puts humanity on a firm and unyielding deadline, climate change can be the force—the grand push—that will bring together all of these still living movements. A rushing river fed by countless streams, gathering collective force to finally reach the sea. "The basic confrontation which seemed to be colonialism versus anticolonialism, indeed capitalism versus socialism, is already losing its importance," Frantz Fanon wrote in his 1961 masterwork, *The Wretched of the Earth*. "What matters today, the issue which blocks the horizon, is the need for a redistribution of wealth. Humanity will have to address this question, no matter how devastating the consequences may be."<sup>14</sup> Climate change is our chance to right those festering wrongs at last—the unfinished business of liberation.

Winning will certainly take the convergence of diverse constituencies on a scale previously unknown. Because, although there is no perfect historical analogy for the challenge of climate change, there are certainly lessons to learn from the transformative movements of the past. One such lesson is that when major shifts in the economic balance of power take place, they are invariably the result of extraordinary levels of social mobilization. At those junctures, activism becomes something that is not performed by a small tribe within a culture, whether a vanguard of radicals or a subcategory of slick professionals (though each play their part), but becomes an entirely normal activity throughout society—it's rent payers associations, women's auxiliaries, gardening clubs, neighborhood assemblies, trade unions, professional groups, sports teams, youth leagues, and on and on. During extraordinary historical moments—both world wars, the aftermath of the Great Depression, or the peak of the civil rights era—the usual categories dividing "activists" and "regular people" became meaningless because the project of changing society was so deeply woven into the project of life. Activists were, quite simply, everyone.

Which brings us back to where we started: climate change and bad timing. It must always be remembered that the greatest barrier to humanity rising to meet the climate crisis is not that it is too late or that we don't know what to do. There is just enough time, and we are swamped with green tech and green plans. And yet the reason so many of us are inclined to answer Brad

Werner's provocative question in the affirmative is that we are afraid—with good reason—that our political class is wholly incapable of seizing those tools and implementing those plans, since doing so involves unlearning the core tenets of the stifling free-market ideology that governed every stage of their rise to power.

And it's not just the people we vote into office and then complain about—it's us. For most of us living in postindustrial societies, when we see the crackling black-and-white footage of general strikes in the 1930s, victory gardens in the 1940s, and Freedom Rides in the 1960s, we simply cannot imagine being part of any mobilization of that depth and scale. That kind of thing was fine for them but surely not us—with our eyes glued to smart phones, attention spans scattered by click bait, loyalties split by the burdens of debt and insecurities of contract work. Where would we organize? Who would we trust enough to lead us? Who, moreover, is "we"?

In other words, we are products of our age and of a dominant ideological project. One that too often has taught us to see ourselves as little more than singular, gratification-seeking units, out to maximize our narrow advantage, while simultaneously severing so many of us from the broader communities whose pooled skills are capable of solving problems big and small. This project also has led our governments to stand by helplessly for more than two decades as the climate crisis morphed from a "grandchildren" problem to a banging-down-the-door problem.

All of this is why any attempt to rise to the climate challenge will be fruitless unless it is understood as part of a much broader battle of world-views, a process of rebuilding and reinventing the very idea of the collective, the communal, the commons, the civil, and the civic after so many decades of attack and neglect. Because what is overwhelming about the climate challenge is that it requires breaking so many rules at once—rules written into national laws and trade agreements, as well as powerful unwritten rules that tell us that no government can increase taxes and stay in power, or say no to major investments no matter how damaging, or plan to gradually contract those parts of our economies that endanger us all.

And yet each of those rules emerged out of the same, coherent world-view. If that worldview is delegitimized, then all of the rules within it become much weaker and more vulnerable. This is another lesson from social movement history across the political spectrum: when fundamental change does come, it's generally not in legislative dribs and drabs spread out evenly over decades. Rather it comes in spasms of rapid-fire lawmaking, with one breakthrough after another. The right calls this "shock therapy"; the left calls it "populism" because it requires so much popular support and mobilization to occur. (Think of the regulatory architecture that emerged in the New Deal period, or, for that matter, the environmental legislation of the 1960s and 1970s.)

So how do you change a worldview, an unquestioned ideology? Part of it involves choosing the right early policy battles—game-changing ones that don't merely aim to change laws but change patterns of thought. That means that a fight for a minimal carbon tax might do a lot less good than, for instance, forming a grand coalition to demand a guaranteed minimum income. That's not only because a minimum income, as discussed, makes it possible for workers to say no to dirty energy jobs but also because the very process of arguing for a universal social safety net opens up a space for a full-throated debate about values—about what we owe to one another based on our shared humanity, and what it is that we collectively value more than economic growth and corporate profits.

Indeed a great deal of the work of deep social change involves having debates during which new stories can be told to replace the ones that have failed us. Because if we are to have any hope of making the kind of civilizational leap required of this fateful decade, we will need to start believing, once again, that humanity is not hopelessly selfish and greedy—the image ceaselessly sold to us by everything from reality shows to neoclassical economics.

Paradoxically, this may also give us a better understanding of our personal climate inaction, allowing many of us to view past (and present) failures with compassion, rather than angry judgment. What if part of the reason so many of us have failed to act is not because we are too

selfish to care about an abstract or seemingly far-off problem—but because we are utterly overwhelmed by how much we do care? And what if we stay silent not out of acquiescence but in part because we lack the collective spaces in which to confront the raw terror of ecocide? The end of the world as we know it, after all, is not something anyone should have to face on their own. As the sociologist Kari Norgaard puts it in *Lining in Denial*, a fascinating exploration of the way almost all of us suppress the full reality of the climate crisis, "Denial can—and I believe should—be understood as testament to our human capacity for empathy, compassion, and an underlying sense of moral imperative to respond, even as we fail to do so."<sup>15</sup>

Fundamentally, the task is to articulate not just an alternative set of policy proposals but an alternative worldview to rival the one at the heart of the ecological crisis—embedded in interdependence rather than hyper-individualism, reciprocity rather than dominance, and cooperation rather than hierarchy. This is required not only to create a political context to dramatically lower emissions, but also to help us cope with the disasters we can no longer to avoid. Because in the hot and stormy future we have already made inevitable through our past emissions, an unshakable belief in the equal rights of all people and a capacity for deep compassion will be the only things standing between civilization and barbarism.

This is another lesson from the transformative movements of the past: all of them understood that the process of shifting cultural values—though somewhat ephemeral and difficult to quantify—was central to their work. And so they dreamed in public, showed humanity a better version of itself, modeled different values in their own behavior, and in the process liberated the political imagination and rapidly altered the sense of what was possible. They were also unafraid of the language of morality to give the pragmatic, cost-benefit arguments a rest and speak of right and wrong, of love and indignation.

In *The Wealth of Nations*, Adam Smith made a case against slavery that had little to do with morality and everything to do with the bottom line. Work by paid laborers, he argued, "comes cheaper in the end than that performed by slaves": not only were slave owners responsible for the high costs of the "wear and tear" of their human property but, he claimed, paid laborers had a greater incentive to work hard.<sup>16</sup> Many abolitionists on both sides of the Atlantic would embrace such pragmatic arguments.

However, as the push to abolish the slave trade (and later, slavery itself) ramped up in Britain in the late eighteenth century, much of the movement put considerably more emphasis on the moral travesties of slavery and the corrosive worldview that made it possible. Writing in 1808, British abolitionist Thomas Clarkson described the battle over the slave trade as "a contest between those who felt deeply for the happiness and the honour of their fellow-creatures, and those who, through vicious custom and the impulse of avarice, had trampled under-foot the sacred rights of their nature, and had even attempted to efface all title to the divine image from their minds."<sup>17</sup>

The rhetoric and arguments of American abolitionists could be even starker and more uncompromising. In an 1853 speech, the famed abolitionist orator Wendell Phillips insisted on the right to denounce those who in the harshest terms defended slavery. "Prove to me now that harsh rebuke, indignant denunciation, scathing sarcasm, and pitiless ridicule are wholly and always unjustifiable; else we dare not, in so desperate a case, throw away any weapon which ever broke up the crust of an ignorant prejudice, roused a slumbering conscience, shamed a proud sinner, or changed, in any way, the conduct of a human being. Our aim is to alter public opinion." And indispensable to that goal were the voices of freed slaves themselves, people like Frederick Douglass, who, in his writing and oratory, challenged the very foundations of American patriotism with questions like "What, to the American slave, is your 4th of July?"<sup>18</sup>

This kind of fiery, highly polarizing rhetoric was typical of a battle with so much at stake. As the historian David Brion Davis writes, abolitionists understood that their role was not merely to ban an abhorrent practice but to try to change the deeply entrenched values that had made slavery acceptable in the first place. "The abolition of New World slavery depended in large

measure on a major transformation in moral perception—on the emergence of writers, speakers, and reformers, beginning in the mid-eighteenth century, who were willing to condemn an institution that had been sanctioned for thousands of years and who also strove to make human society something more than an endless contest of greed and power."<sup>19</sup>

This same understanding about the need to assert the intrinsic value of life is at the heart of all major progressive victories, from universal suffrage to universal health care. Though these movements all contained economic arguments as part of building their case for justice, they did not win by putting a monetary value on granting equal rights and freedoms. They won by asserting that those rights and freedoms were *too* valuable to be measured and were inherent to each of us. Similarly, there are plenty of solid economic arguments for moving beyond fossil fuels, as more and more patient investors are realizing. And that's worth pointing out. But we will not win the battle for a stable climate by trying to beat the bean counters at their own game—arguing, for instance, that it is more cost-effective to invest in emission reduction now than disaster response later. We will win by asserting that such calculations are morally monstrous, since they imply that there is an acceptable price for allowing entire countries to disappear, for leaving untold millions to die on parched land, for depriving today's children of their right to live in a world teeming with the wonders and beauties of creation.

The climate movement has yet to find its full moral voice on the world stage, but it is most certainly clearing its throat—beginning to put the very real thefts and torments that ineluctably flow from the decision to mock international climate commitments alongside history's most damned crimes. Some of the voices of moral clarity are coming from the very young, who are calling on the streets and increasingly in the courts for intergenerational justice. Some are coming from great social justice movements of the past, like Nobel laureate Desmond Tutu, former archbishop of Cape Town, who has joined the fossil fuel divestment movement with enthusiasm, declaring that "to serve as custodians of creation is not an empty title; it requires that we act, and with all the urgency this dire situation demands."<sup>20</sup> Most of all, those clarion voices are -coming from the front lines of Blockadia, from those lives most directly impacted by both high-risk fossil fuel extraction and early climate destabilization.

### **Suddenly, Everyone**

Recent years have been filled with moments when societies suddenly decide they have had enough, defying all experts and forecasters—from the Arab Spring (tragedies, betrayals, and all), to Europe's "squares movement" that saw city centers taken over by demonstrators for months, to Occupy Wall Street, to the student movements of Chile and Quebec. The Mexican journalist Luis Hernandez Navarro describes those rare political moments that seem to melt cynicism on contact as the "effervescence of rebellion."<sup>21</sup>

What is most striking about these upwellings, when societies become consumed with the demand for transformational change, is that they so often come as a surprise—most of all to the movements' own organizers. I've heard the story many times: "One day it was just me and my friends dreaming up impossible schemes, the next day the entire country seemed to be out in the plaza alongside us." And the real surprise, for all involved, is that we are so much more than we have been told we are—that we long for more and in that longing have more company than we ever imagined.

No one knows when the next such effervescent moment will open, or whether it will be precipitated by an economic crisis, another natural disaster, or some kind of political scandal. We do know that a warming world will, sadly, provide no shortage of potential sparks. Sivan Kartha, senior scientist at the Stockholm Environment Institute, puts it like this: "What's politically realistic today may have very little to do with what's politically realistic after another few Hurricane Katrinas and another few Superstorm Sandys and another few Typhoon Bophas hit us."<sup>22</sup> It's true: the world tends to look a little different when the objects we have worked our

whole lives to accumulate are suddenly floating down the street, or smashed to pieces, turned to garbage.

The world also doesn't look much like it did in the late 1980s. Climate change, as we have seen, landed on the public agenda at the peak of free market, end-of-history triumphalism, which was very bad timing indeed. Its do-or-die moment, however, comes to us at a very different historical juncture. Many of the barriers that paralyzed a serious response to the crisis are today significantly eroded. Free market ideology has been discredited by decades of deepening inequality and corruption, stripping it of much of its persuasive power (if not yet its political and economic power). And the various forms of magical thinking that have diverted precious energy—from blind faith in technological miracles to the worship of benevolent billionaires—are also fast losing their grip. It is slowly dawning on a great many of us that no one is going to step in and fix this crisis; that if change is to take place it will only be because leadership bubbled up from below.

We are also significantly less isolated than many of us were even a decade ago: the new structures built in the rubble of neoliberalism—everything from social media to worker co-ops to farmer's markets to neighborhood sharing banks—have helped us to find community despite the fragmentation of postmodern life. Indeed, thanks in particular to social media, a great many of us are continually engaged in a cacophonous global conversation that, however maddening it is at times, is unprecedented in its reach and power.

Given these factors, there is little doubt that another crisis will see us in the streets and squares once again, taking us all by surprise. The real question is what progressive forces will make of that moment, the power and confidence with which it will be seized. Because these moments when the impossible seems suddenly possible are excruciatingly rare and precious. That means more must be made of them. The next time one arises, it must be harnessed not only to denounce the world as it is, and build dueling pockets of liberated space. It must be the catalyst to actually build the world that will keep us all safe. The stakes are simply too high, and time too short, to settle for anything less.

A year ago, I was having dinner with some newfound friends in Athens. I asked them for ideas about what questions I should put to Alexis Tsipras, the young leader of Greece's official opposition party and one of the few sources of hope in a Europe ravaged by austerity.

Someone suggested, "Ask him: History knocked on your door, did you answer?"

That's a good question, for all of us.

## NOTES

N.B.: In the interest of having an endnote section that is shorter than the main text, not every fact in the book has a citation. Facts for which sources are provided include: all quotes, statistics, data points, and facts relating to climate science and carbon mitigation, though often only when the fact first appears in the text and not on repeat references. Facts that do not fall into these categories, but are controversial for some reason, are also sourced.

Sources are not provided for references to uncontroversial facts (usually news events) that can be easily confirmed with a keyword search. Facts that clearly come from the author's personal reporting (but are not quotes) are also generally not sourced.

In cases where there are sources for multiple facts and quotes in a paragraph, one superscript note number appears at the end of the paragraph rather than a number after each individual fact. In the notes section here, the sources are listed in the order in which the facts appear in the paragraph, unless otherwise indicated. This has been done in the interest of achieving a less-cluttered text and further shortening the length of the endnote section.

Quotations that come from interviews conducted by the author or her researchers (usually Rajiv Sicora or Alexandra Tempus) or from the documentary film accompanying this book (directed by Avi Lewis) appear in the endnotes as "personal interview."

If there is a source for a footnote, it is cited in the numbered endnote most closely following the asterisk in the text; such sources are marked FOOTNOTE.

Web addresses for news articles available online are not included because of the transient nature of Web architecture. In cases where a document is available exclusively online, the home page where it appears is cited, not the longer URL for the specific text, once again because links change frequently.

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