Suffering and the moral imperative to reimagine resilience

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In the early 1990s, politicians, scientists, and environmental activists debated the merits of adaptation as a strategy for responding to climate change. Proponents argued that measures like building seawalls, burying electric lines, and developing drought resistant crops were essential to accommodate ourselves to a warmer future. To do otherwise was irresponsible. In contrast, critics feared that adaptation would be a dangerous distraction. They argued that adaptation might provide a false sense of security and thus possibly undermine mitigation efforts. In their view, adaptation was the height of irresponsibility as it represented surrender to a climate changed world (Gore 1992; Revkin 2002). In economic language, adaptation represented a "moral hazard."

Despite heated debate, within only a few years, the critical voices grew silent as meteorological events rendered their viewpoints anachronistic. A string of record-breaking temperatures, devastating storms, rapidly melting ice caps, and untimely droughts across the globe made clear that the opening chapters of the climate age were upon us and thus it would be unethical and reckless not to take action to minimize the harm global warming was bringing in its wake. By the time the Intergovernmental Panel on Climate Change (IPCC) published its third assessment in 2007, the matter was settled. In no uncertain terms, the IPCC called for aggressive adaptation measures in addition to mitigation efforts (IPCC 2007). It recognized that we had entered a new phase: climate change was not a future possibility but a present reality whose effects could no longer be avoided.

In this chapter I suggest that we are in the opening chapters of a third phase of climate change, one that requires us to move beyond not just mitigation but also adaptation – two mechanisms at the core of Climate Inc. This third phase recognizes that no matter how much we mitigate and adapt to climate change, the world has pumped so much carbon into the atmosphere that irreversible, punishing climate change is inescapable. Thus, we no longer have the luxury of trying only to avoid or minimize the effects of climate change; we now have to learn how to live in a warmer world. And key to this involves learning how to live necessarily with widespread

suffering. Today, tens of thousands of people and untold other species are having their lives ripped out from under them because of climate change and we know that this will only get worse. Climate Inc., which focuses fundamentally on a combination of mitigation and adaptation strategies, remains largely silent about widespread suffering. It assumes that we can dodge, one way or another, the climate bullet. It ignores the reality of having to live with pervasive pain.

What does it mean to live with widespread climate suffering? Can the world respond meaningfully to it? If so, what would such a response look like and how would it fit into broader local, national, and international strategies to address climate change? This chapter explores the politics of climate suffering. At its core, it seeks to find an appropriate response to climate hardship. Mitigation was a response to the buildup of greenhouse gases. Adaptation was a response to an inability to reduce atmospheric carbon concentrations. What is the proper response to suffering? Is there a promising policy measure or orientation appropriate for the current age of widespread climate hardship?

In the pages that follow, I advance the idea of "radical resilience" as a meaningful rejoinder. Resilience usually means the ability to withstand exogenous assaults and bounce back to pre-existing conditions. With regard to climate change, it conventionally involves building nimble structures and communities that can withstand climate assaults and return to a semblance of the status quo. In contrast, *radical* resilience eschews the status quo. It sees the existing conditions as the cause or at least intensifier of widespread climate suffering and thus seeks to transform it. Put differently, radical resilience places suffering at the center of its considerations and employs it as a tool for both analyzing and prescribing ways to respond to climate challenges. This chapter argues for reimagining climate change by going beyond Climate Inc.'s commitment to mitigation and adaptation and adding radical resilience to the menu of policy choices.

Climate change and suffering

Today, global average temperatures are higher than they have been in 4,000 years and every ecosystem is showing signs of climate stress. Everything on earth that is frozen is melting; historic droughts are drying up essential agricultural lands; floods due to rising sea levels and ocean surges are inundating previously protected cities; biodiversity is plummeting as ecotones shift toward the poles; and intensifying storms are tearing apart houses, businesses, and electrical grids. We have become familiar with this litany of climate calamities as it now represents the horizon within which we live. Indeed, climate change is a system-altering phenomenon that is throwing entire organic and human infrastructures out of whack. Mitigation and adaptation efforts – the core strategies for responding to climate change for the last two decades – have reached their limits. It is clear

that climate change consequences cannot easily be prevented or prepared for. We have entered a new phase of climate change that demands strategies that transcend attempts to stop or simply adjust to a warmer world.

In 1997, in what is now considered the first phase of the Kyoto Protocol, countries agreed to reduce their greenhouse gas emissions by 5 percent below 1990 levels (this was considered simply an opening bid toward mitigation since scientists called for reductions of 80 percent below 1990 levels to stabilize the climate; Gupta *et al*. 2007, 776). Over the past two decades, initiatives have expanded the use of renewables like wind, solar, and hydroelectric and the greater use of more traditional fuels like nuclear power and natural gas has led to significant energy intensity reductions for some countries and actual emissions reductions in others (Clark 2012). Furthermore, the 2015 Paris meetings represented another major commitment as countries went on record to reduce greenhouse gas emissions by sizeable amounts. Despite such efforts and pledges, mitigation has done little to alter climate change's trajectory and shows little sign of being able to do so given even the most forward looking commitments to date. When Kyoto was signed, world CO_2 emissions stood at 24.4 billion tons. Today, they stand at 34 billion tons (USEPA 2015). Kyoto and its aftermath have done little to slow world carbon emissions. Furthermore, having agreed in Copenhagen in 2009 to ensure that global temperatures should not rise more than 2° Celsius – a figure that was widely seen as the absolute maximum to avoid the most devastating ecological feedbacks – countries are increasingly recognizing that within the context of current political and economic realities even this target may no longer be an option.

Adaptation efforts are harder to measure but provide little additional comfort. Individual countries have invested in information technologies aimed at predicting severe weather events and assessing the vulnerability of large-scale energy, water, and food systems. Additionally, some states have made actual infrastructural adjustments to accommodate increased flooding and more intensified storms, and mandated that local governing bodies establish emergency response capabilities. At the global level, the United Nations has established a number of funds to finance adaptation and every significant international negotiation related to climate change addresses adaptation to some degree. Such efforts specifically target least developed countries (UNFCCC 2014; Climate Funds Update undated; Adaptation Fund Board 2013, 28). Notwithstanding such efforts, adaptation protects a precious few from the ravages of stronger storms, longer droughts, and higher temperatures. Not only have the poor or otherwise marginalized been left out of most adaptation considerations, the entire effort has yet to be scaled up to enable much of humanity to dodge the disasters associated with climate change, and there are serious questions about whether adaptation can ever reach a globally meaningful scale.

The shortcomings of mitigation and adaptation make clear that we have entered a new phase of climate change. Environmental intensification is

now a way of life. We can keep telling ourselves that the climate will somehow stabilize if we can simply double down on our Climate Inc. efforts by mitigating more or putting in place more adequate and abundant adaptation measures. But this ignores what is happening before our eyes. We are living in a climate changed and changing world. It is too late to stop accelerating change and to evade widespread hardship for the current as well as future generations – at least within any reasonable timeframe. Along with our mitigation and adaptation efforts that aim at stopping or avoiding climate pain, we must also adopt ways of confronting climate suffering.

The (under) study of climate suffering

To date, policymakers, scholars, activists, and others have largely ignored climate suffering. To be sure, they have reported anecdotes from the frontlines of climate hardship and have rehearsed the litany of climate dangers (as I have done above). But they have not taken seriously the reality of climate pain and have thus left it under-analyzed and under-theorized. This is partly because researchers have failed to notice the political dimension of suffering. They have seen suffering as a residual category – something that happens *after* political efforts are already expended. Put differently, climate suffering is simply what happens when mitigation and adaptation fail. First we try to mitigate climate change; then we try to adapt to those changes we cannot avoid; finally, we simply suffer. Suffering, as such, is merely the last, unavoidable experience in a line of human effort. Thus, it lacks political definition insofar as power relations seem to be out of the picture and there is little collectively to be done about it.

Most of us tend to think of climate hardship as a homogeneous experience. Catastrophes like Katrina and Sandy, the heat waves that have ravaged Europe and more recently India, the intensified flooding that has inundated the Philippines, and the punishing droughts that have devastated Australia in recent years seem to hit people equally. They do not discriminate between income levels, cultures, race, or varied political systems. If you are in the eye of the storm or the belly of the drought zone, you are affected. Period. The homogeneous quality of the experience suggests that questions of power and sociological distinctions – which are clearly relevant for addressing mitigation and adaptation responsibilities – are inappropriate for making sense of climate suffering. There is no politics for that which affects people equally.

This orientation comes from seeing the effects of climate change simply as biophysical facts of life. Humans may be the cause of climate change – and, indeed, some are more implicated than others – but people have no influence over the ecological dynamics once the process is underway and thus over who will be affected and to what degree. Climate change, in this sense, plays no favorites. It is a matter of indifferent bio-chemical mechanics. The anonymous character pushes politics further into the background

insofar as it then renders the sensed experience of hardship a matter of individuality. That is to say, while the cause of climate hardship arises out of public circumstances, once the effects land on the body, etch into the mind, or stir the emotions, they enter a private space often seen as inaccessible to political analysis and response.

Such an understanding blinds itself to the widespread evidence showing how the poor and the politically weak are disproportionately on the receiving end of climate change. The poor and disadvantaged not only tend to live on the most fragile land, in the most tenuous shelters, and among the thinnest of official safety networks; they also have the least amount of resources to deploy in adjusting to changed conditions. For the poorest of the poor, life is often a struggle to secure basic needs. As Paul Farmer writes, the most impoverished have only a tenuous "hold on survival" (Farmer 1997, 262). For the less destitute, poverty involves a dearth of capabilities and a narrowly circumscribed spectrum of life chances (Sen 1999; Nussbaum and Sen 1993). This makes the poor the most defenseless against and susceptible to climate suffering. Indeed, almost every instance of weather-related tragedies even mildly associated with climate change – for example, hurricane Sandy in the US, Typhoon Haiyan in the Philippines, and the flooding of Bhola Island in Bangladesh – found the poor disproportionately affected (World Meteorological Organization 2006; Parenti 2011; UNDP 2014). The poor are the least able to evacuate threatened and then ravaged areas, the last to receive sustained relief, and the least able to rebuild the physical circumstances of their lives after catastrophe strikes. This fits a broader pattern of environmental injustice and reminds us that climate suffering is not some private, individualized, idiosyncratic experience that just happens to accompany climate change, but a political reality in which power determines the socio-economic pattern of environmental pain (Bullard 1999, 2005; Lerner 2012).

The political aspect of climate suffering comes into even sharper relief when one notices that the emotional and intellectual experiences of climate hardship result not simply from geographical or exogenous biophysical forces or even patterns of collective experience, but include the social construction of people's interior landscape. As Kleinman, Das, and Lock point out, suffering takes place in "nested contexts of embodiment" that partly determine the felt quality of one's physical and existential experience (Kleinman *et al*. 1997, xix). Through media representations of climate suffering, mobilization of different forms of emergency response, and institutional requirements for refugee status, medical attention, and financial restitution, the actual experience of climate suffering itself is politically and socially framed. Discourses of climate hardship instrumentalize one's inner experience. For instance, today people understand themselves as climate "refugees," "insurance beneficiaries," and/or "victims" based on social categories of climate disaster that are driven and perpetuated by the current regime of Climate Inc.

The absence of scholarly and policy attention to climate suffering has not only left the politics of climate hardship un-analyzed, it has also helped fuel the de-politicization of climate policies and response strategies. Ghettoized into the private sphere and understood as merely an idiosyncratic reaction to a natural phenomenon, suffering is not about structures of power or politics per se but matters of medical and emergency response. As such, it involves solely the somatic and psychological dimensions of enduring hardship.

This is why, as I argue, mitigation and adaptation are incomplete as strategies for addressing climate change. Aimed at preventing climate suffering, they are speechless in response to climate pain once it inevitably arrives. That is, they each aim to avoid or minimize the experience of climate hardship to a degree that they then offer no insight into how to soldier or otherwise live through the physical, emotional, and intellectual pain of climate suffering.

Radical resilience

Radical resilience recognizes and embraces the political dimensions of climate suffering. It deliberately interprets climate pain through political categories and seeks to identify opportunities to transform current ways of life, social conditions, and political arrangements that drive climate change and splice humanity into haves and have-nots such that people unjustly experience fundamentally different degrees of climate hardship.

Mitigation and adaptation seek to preserve the status quo. Mitigation does so by defining climate change as an emissions problem and working to reduce and eventually stop the buildup of greenhouse gas concentrations in the atmosphere. Its aim, in other words, is not social or political change per se but mechanical. If we moved to a post-carbon world through some technological innovation, market adjustment, or incremental behavioral change that did not alter structures of power, mitigation would be a success. It implicitly values the status quo of our carbon world and seeks to preserve it by solving a specific problem. Climate change is not a civilizational or fundamentally political challenge rather it is a circumscribed mechanistic dilemma in need of a bounded solution.

Likewise, adaptation preserves the status quo by mimicking it. Measures like erecting sea walls, genetically modifying crops to withstand enduring droughts, and changing regulatory codes so buildings can tolerate excessive heat or punishing storms, for instance, act as accouterments to existing socio-political and economic conditions rather than as transformative agents. In fact, they specifically work to maintain existing systems by blunting or accommodating the most painful and potentially damaging climate assaults. Furthermore, as a number of authors have observed, most adaptation schemes seek not merely to protect current power relations but deepen them (Adams 2013; Klein 2014, 8–9). As corporations position themselves to be the providers of "climate ready crops" and private security services

benefit from offering at-risk police services and infrastructures, the power relations of Climate Inc. are perpetuated rather than challenged and altered. Adaptation, in other words, simply grafts accommodations onto contemporary societies rather than leverage widespread change.

Such adjustment is part of even the most forward-looking form of adaptation, namely, resilience. As it is conventionally understood, resilience implies the ability to withstand exogenous assault and bounce back to a pre-existing state of affairs. Many liken it to a reed that can maintain integrity by bending with the wind without snapping. In the context of climate change, resilience refers to the ability of infrastructures and institutions to endure flooding, extreme temperatures, intensified storms, and so forth. In this sense it is the conceptual foundation of adaptation. Today, engineers are designing steel to bend with higher winds and asphalt to expand and contract with extreme temperatures. Pharmacologists are developing medicines and vaccines to protect farm animals from climate-induced, vector-borne diseases. Communities are producing more products locally to withstand the dislocations associated with extreme weather. In such cases, the idea is to create more nimble systems that can absorb climate effects and bounce back. According to Walker and Salt, climate resilience is the "capacity to experience shocks while retaining the same function, structure and identity – without shifting to a new regime" (Walker and Salt 2006, cited in Goldstein 2012, 129). It involves being able to "absorb perturbations without being undermined" (Randolph 2012, 129), or receive an exogenous jolt and return to preexisting conditions. As the 2013 draft National Climate Assessment puts it, resilience is the "capability to anticipate, prepare for, respond to, and *recover* from significant multi-hazard threats with minimum damage to social well-being, the economy and the environment" (NCADAC 2013, 985; emphasis added).

Conventional understandings of resilience are important for orienting adaptation strategies but are incomplete when thinking about climate change in general. This is where *radical* resilience comes in. Radical resilience takes the concept of nimbleness further by adding a sense in which one does not simply bend and then recover or return to preexisting conditions, but evolves into a new set of conditions. It entails transitioning from one state of affairs to another. Radical resilience is akin to Nassim Taleb's notion of "antifragile" (Taleb 2012). For Taleb, antifragility is a state in which things gain from disorder or, put differently, thrive through disruption and pressure. It is about learning, adjusting, and transforming. According to Taleb, antifragility involves absorbing shocks not to bounce back to a pre-existing state, but to get better.

There is an incipient literature focused on this more radical notion of resilience. It recognizes that nimbleness can actually, ironically, postpone necessary changes that can advance widespread and long-term protection against climate change. Focused less on technological capability and emergency response, it emphasizes things like community learning, building

capacity among previously neglected groups, constructing networks for collaboration, embracing uncertainty, and sharing stories of vulnerability to generate social mobilization (Zellner *et al*. 2012; Randolph 2012). This literature implicitly seeks the alteration of existing power relations since power structures tend to resist rather than advance change. From a different angle, the literature celebrates the possibility of new virtues arising that can breed greater compassion and concern for the less fortunate and pave the way for meaningful socio-economic and political change (Thompson and Bendik-Keymer 2012). Although it does not use the phrase, this literature provides a ground for appreciating radical resilience and its appropriateness as a response to climate suffering.

Taking suffering seriously

Radical resilience contravenes Climate Inc. in that it understands and honors the political dimensions of climate suffering and uses this understanding to craft more transformative responses to climate change. There is no question that suffering is a consequence of climate change. It happens as temperatures soar, oceans rise, and storms strengthen, and people and other creatures endure the negative consequences. Radical resilience recognizes how politics comes into play in defining and treating victims of climate suffering (as discussed above) and, in taking this seriously, devises responses that aim to shift the power relations having to do with the lived experience of climate pain. Radical resilience also, however, takes seriously the suffering that precedes and actually produces climate change in the first place. It notices how existing economic, political, and cultural systems that fuel climate change generate widespread pain across various social strata. They create and perpetuate severe inequalities, exploitations, and injustices that are simply part of contemporary collective life. In this sense, radical resilience sees climate travails not simply as the result of an alteration in the status quo (i.e. climate change) but a function *of* the status quo. That is, climate suffering is not some effect emerging from a beneficent system, but the expression of an unjust and exploitative system. Far from resulting solely *from* climate change, suffering also fundamentally *drives* it. Climate change is the atmospheric expression of a system of suffering.

In her most recent book, Naomi Klein helps explain this wider view of suffering. She does so through her description of contemporary societies as "extractive." According to Klein, extractivism is a resource-depleting model of economic growth and development employed by governments across the ideological spectrum wherein the earth and its people are treated as objects to be used rather than honored, nurtured, or embraced:

> 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 and 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.
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> (Klein 2014, 169)

Extractivism, thus understood, is the ultimate form of exploitation. It marginalizes people, renders the nonhuman world as ontologically inferior, and objectifies life so that the powerful can perpetuate and systematize legal, cultural, economic, and political conditions of privilege.

Extractivism and its violences and injustices sit at the center of climate change. All along the climate change chain – excavation, processing, transportation, and the burning of fossil fuels as well as the buildup of atmospheric carbon concentrations – one finds debasement. Take mining. Many people near coalmines, oil refineries, or hydraulic fracturing facilities are living with contaminated water, polluted air, and despoiled landscapes, while distant others enjoy the advantages produced by such hardship. In these cases, the privileged displace the costs and burdens of fossil fuel use to those who are too poor or otherwise political weak to avoid such pain. At work is not simply the machinations of market economics but the moral arrogance of belittling those who live downstream. The same pattern pertains to the burning of fossil fuels. Not only are most coal burning plants, oil refineries, and natural gas facilities far from affluent neighborhoods, but, as mentioned, the poor disproportionately experience severe climate effects. Living on fragile lands and in substandard structures and lacking the means to protect themselves from climate-related incidents, the poor are implicitly on the receiving end of the buildup of CO_2 concentrations in the atmosphere.

One sees this, by the way, not only within certain countries but also between them. For instance, Nepal has contributed virtually nothing to current climate challenges. Almost all its power is hydroelectric or biomass and its per capita energy use is, relative to other countries, infinitesimal. With 60 percent of its people living on less than two dollars a day, a tenuous system of rain-fed agriculture, and a typography that has many living on fragile lands, Nepal is the fourth most vulnerable country to climate disruptions (Maplecroft 2010). In recent years, the country has been ravaged by landslides and mountain flooding (including glacier lake

outbursts) due to erratic and powerful rains, scorching heat and droughts in the plains, and intensified storms that have weakened and, in many cases, crippled much of its infrastructure – conditions that many associate with climate change (see, for example, Yang 2013). Nepal is the victim of a climate extractive mindset (Wapner 2014).

Extractivism is not simply about taking from the poor and politically weak, it also involves robbing future generations. Fossil fuel reserves build up over geologic time yet the world is using them at breakneck speed with little regard about their availability to future generations. To be sure, warnings about peak oil were certainly exaggerated but it is clear that fossil fuels are, for all intents and purposes, finite. At some point in time – and it will certainly be after the world experiences runaway climate change – oil, gas, and coal reserves will tap out. Using them in such profligate ways and in such enormous amounts is to unfairly extract them from future generations.

The same pattern, of course, holds for greenhouse gas emissions. Climate change is already being felt throughout the world but we know that current droughts, floods, and so forth only harbingers of a warmer world. As emissions continue to rise, successive generations will be on the receiving end of intensified, climate-related disasters. By choosing to burn fossil fuels (and cut down trees, graze cattle, and so on) present generations are making the choice to enjoy associated benefits while transferring costs across time to future generations. They are mining the future.

Climate extraction hurts not simply people but also the more-than-human world. Mining fossil fuels rips apart landscapes, pollutes waterways, and thus literally destroys habitat for plants and animals. Even the most environmentally sensitive quarrying degrades air, water, and soil. Extractivism takes its toll deep into the earth's crust, far across its oceans, high into its skies, and into the very membranes of living beings that must suffer contamination from the mining and burning of fossil fuels. Climate extraction also includes deforestation not only because forests must be cleared to locate, remove, and transport shale oil, tar sands, and natural gas, but also because deforestation releases roughly 3 billion tons of carbon into the atmosphere each year and thus is part of the climate extractivist complex (Union of Concerned Scientists undated). Like those humans living downstream from climate extractivist practices, nature is silent in its suffering. The production of climate change fundamentally involves power as an anthropocentric mindset encourages humanity to treat nature with abandon.

Politics operates not only at the causal end of climate hardship for the more-than-human world but also, as should be obvious, in the consequences. Hotter temperatures, changes in humidity, and newly emerging seasonal fluctuations are shifting biomes across the planet and undermining the ecological base of many creatures. To be sure, some animals and plants can migrate across ecosystems in search of accommodating conditions. But many others lack mobility and most are unable to cross highways, cities,

and other manufactured features of the human-changed landscape. In fact, many now identify climate change as a primary cause of species extinction and this represents a further example of extractive practice (CHGE undated; Convention on Biological Diversity undated).

Nonhuman species and those people most vulnerable to displacement across time and space share the same status and condition. They are the voiceless, poor, politically powerless, and disregarded of the world – the "global residuum," as Mike Davis (2006) puts it. Future generations, for instance, do not vote, buy and sell goods, or otherwise lodge public preferences. Likewise, the marginalized, from whom industries grab resources and who lack material protection, have little influence on public affairs. In fact, they are usually the victims of other people's decisions. And of course nonhuman creatures not only find themselves undeserving of moral worth but also lack the capacity for political expression. In all three cases, power differentials structure relationships and assume patterns of injustice. The most disturbing thing is that these patterns, which reveal climate inequality, are not unique to fossil fuels or even environmental issues in general. They are part of, and in fact intimately constitute, the contemporary world (Wapner and Matthew 2009).

Climate Inc., with mitigation and adaptation as its poster children, is either blind to or, for convenience sake, ignores contemporary societal injustices and hardships. This is unsurprising given its circumscribed aim to focus on climate protection but it also indicates how deeply extractivism and suffering are woven into contemporary regimes. Power differentials and widespread pain are often hidden from view. They are part of, what Edward Said calls, the "normalized quiet of unseen power" (Said 2001, quoted in Nixon 2011, 34). This correlates with Galtung's (1969) notion of structural violence or, more recently, Nixon's (2011) understanding of slow violence. According to Nixon, slow violence is "violence [that] is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales" (Nixon 2011, 2). This is exactly what is happening as the privileged and underprivileged go about their lives often unaware of the accretive brutality that courses through and imprints itself upon the very bodies of those living (or soon to be living) downstream.

Mitigation and adaptation miss this wider, more intimate type of violence and therefore suffering. So focused on the legitimate horrors of climate change, they ignore the pervasive repulsions of contemporary life that produce climate change in the first place and that mark the lives of those living on the frontlines of climate intensification. Mitigation and adaptation, as insurers of the status quo, have little room to consider, let alone respond effectively to, climate suffering. Suffering remains a residual category invisible to Climate Inc. yet capable of harboring injustices that perpetuate the engines of climate change.

Toward climate justice

How does one move forward? How can one take climate suffering seriously and conscientiously respond? What does it mean to move beyond mitigation and adaptation? Is there really any responsible place beyond efforts to avoid or adjust to climate change? Here is where radical resilience comes in. Radical resilience offers a trajectory that questions Climate Inc. It provides a way to address the injustices that give rise to and are produced by climate change. In this last section, I would like to provide a few examples of radical resilience with the aim of showing that climate suffering need not be left out of political analysis and action but can meaningfully direct efforts. I should mention at the outset that the following examples are merely illustrative not empirically uncontestable or conceptually airtight. The hope, however, is that they can provide some sense of how the imagination can help move us beyond Climate Inc.

The first example has to do with using radical resilience to distinguish between technological choices. Many people have been advocating for nuclear power as a substitute for fossil fuels. Nuclear energy emits no greenhouse gases and is thus seen as a partial answer to our climate woes. A number of countries rely heavily on nuclear power and the nuclear option represents a promising direction for countries seeking to reduce their reliance on fossil fuels. What does radical resilience offer for thinking about nuclear power?

Radical resilience, remember, aims at transformation. It responds to exogenous pressures not by resisting change or bending with force and then working to aright itself, but by capitalizing on outside pressures to establish better conditions. Radical resilience in the context of climate change involves building communities that can absorb and bend with climate shocks with the aim of creating conditions more amenable to addressing climate suffering. Nuclear energy largely fails the test of radical resilience since it requires hard technologies operated by centralized entities and thus does little to change existing power relations. Nuclear energy keeps in place the inequalities and perpetuates the injustices associated with the systems that brought us climate change in the first place and does nothing to alter those societal hierarchies that sustain exploitative practices. To be sure, nuclear energy represents a form of mitigation, in that it reduces carbon emissions, and offers a way of moving to a post-carbon economy. But, without the ability to transform broader power relations and operating by mining uranium, it accentuates the extractivist mindset. It fails to open up genuinely new trajectories toward a future of significantly less suffering.

In contrast, consider solar energy. Unlike nuclear power, solar energy illustrates a type of radical resilience. Solar energy uses soft technologies and, most importantly, promises to decentralize energy production and use. It potentially can break up concentrations of economic power and make people less beholden to large energy companies that are fundamentally

committed to selling fuel. Unlike coal, oil, and gas reserves, the sun shines everywhere. Potentially, anyone can utilize its energy. To be sure, solar technology is presently expensive and thus embracing solar in the short-term accentuates structures of economic power. However, this is beginning to change and there is nothing necessary about capturing solar energy that requires concentrations of political and economic power. The price of solar energy has dropped significantly over the past few decades (solar energy costs went from US$76.67 per watt in 1977 to US$0.613 per watt in 2013; Clean Technica 2014). Additionally, millions of villages in the least developed parts of the world are adopting some type of inexpensive, photovoltaic or solar water heating system each year (McDonnell 2014). Below the radar of price and numbers of users, solar has distributional potential in that consumers need not rely on external providers but become their own generators of energy. In this sense, solar plays a key part today in, what is called, "distributed energy" – off-grid, small-scale devices that can provide electricity and, sometimes, thermal energy, directly to consumers (USDE undated).

Aside from being carbon-free in its operation and decentralizing in terms of power distribution, solar also represents a step away from an extractivist mentality. We no longer need to reach into the earth and steal its fossilized life or uranium deposits but can cultivate a reciprocal relationship with the endless renewable capacity of the sun. Solar is not about purely taking, as Klein would say, but involves stewardship in that it harmonizes with rather than lording over ecosystemic dynamics. It is a form of radical resilience because it is building an ability to adapt to a post-carbon future through means that promise to transform contemporary power relations. While imperfect, the introduction of solar can reduce suffering by contributing less to climate change and offering individuals and communities the ability to take greater control over energy production and use by localizing power generation.

A second example contrasts radical resilience with adaptation (recognizing that resilience is a form of adaptation). Recently, scientists have been calling for more research into and some piloting of geoengineering schemes. Geoengineering involves altering the biophysics of the planet to blunt the harmful effects of global warming. Ideas include pumping sulfates into the atmosphere to scatter sunlight and thus reduce the amount of heat hitting the planet, introducing sunshades to reflect sunlight, fertilizing the oceans with iron to grow more phytoplankton that would absorb CO_2, and capturing and sequestering carbon. These may sound fantastical and even, to some, desirable. But we should recognize that geoengineering is not about reducing emissions or otherwise calling for changing current behavior. Rather, it promises that society can continue on its fossil fueled path without having to endure rising temperatures. Moreover, many of its proponents tell us that it is cheap. Geoengineering promises to moderate temperatures at a fraction of the financial costs of most large-scale mitigation measures.

(To be sure, advocates always say that geoengineering should not replace efforts to reduce emissions and that it is only a "last resort," but one should recognize the fundamental distinction between trying to solve climate change and simply postponing it [see Chapter 7, this volume]).

Geoengineering is a type of adaptation insofar as it promises to accommodate us to an increasingly carbon rich world. It offers a technological response that can blunt the experiential effects of climate change even if the biophysical mechanisms are still at work. The problem with geoengineering, from the perspective of climate suffering, is that it offers nothing in the way of transformative leverage. Existing power relations can remain intact; fossil fuel companies need not alter their portfolios or otherwise switch practices; the poor will continue to be poor and experience the hardships of slow violence. Geoengineering, in other words, simply extends the status quo and remains tone deaf to the suffering laced through contemporary systems and ripe for alteration in a climate age.

In contrast to geoengineering, aid to the developing countries represents an alternative adaptive response and, since it has the potential to alter power relations, is closer to a form of radical resilience. Ever since developing countries called for a New Economic Order, the world has clearly understood the devastating effects of global economic inequality. Colonial strictures established imperialist relations and the North performed sustained extraction on the South. (This is not to say, of course, that all of the South's problems – even all its economic ones – stem from Northern exploitative economic practices. It simply recognizes how the modern world economy established itself on core-periphery relations based on an extractive mindset.) Development aid can transform this relationship. If done fairly and sensitively – rather than using development aid as another tool to deepen dependency – it has the potential to empower the South to take more control over its destiny, democratize its regimes, and otherwise alter relations of power such that extraction need not continue. Furthermore, it has the potential to do this while it is helping poorer nations withstand the worst effects of climate change. Adaptive development aid is not your typical "build higher sea walls." Rather, it infuses the developing world with climate-associated capacity and thereby uses climate change as an opportunity to reduce the suffering that accompanies severe economic inequality, alter life chances throughout the world, and shift geopolitical power imbalances.

These examples point to a final promise of radical resilience. Throughout this chapter, I have discussed radical resilience as an alternative or at least add-on to mitigation and adaptation. I introduced it as a way to address climate suffering and thus distinguished it from the two other approaches that simply see suffering as a residual consequence of failed mitigation and adaptation. Such distinction, while analytically useful, is conceptually and practically imprecise. Climate suffering is not a residual category that comes after mitigation and adaptation. Rather, it fundamentally influences the other two. How people experience or imagine climate suffering will have a

tremendous impact on their commitment to and choice of mitigation and adaptation strategies. Put differently, how people live through the traumas of climate intensification not only determines the quality of their pain, but also influences their attitudes toward mitigation and adaptation. Indeed climate suffering is already sending people in different mitigation and adaptation directions.

For some people and states the experience or specter of climate hardship appears so traumatic that it inspires them to pursue survivalist strategies. This involves walling themselves off from others in anticipation of food riots, waves of refugees, and collapsing infrastructure. Today, Chinese firms are buying up agricultural land in Africa, India is completing a containment wall along its Bangladesh border to stem climate refugees, and people throughout the developed world are investing in generators, water purification systems and even guns to insulate themselves from the expected chaos associated with climate change (Malley 2011; Brown 2009; Tidwell 2011). Such moves fit one strand of the social science and popular literature which suggests that collective hardship leads to competitive tendencies (see, for example, Friedman 2005; Nordhaus and Shellenberger 2007).

In other cases, the experience and fear of climate hardship is less frightening or at least leads to less desperate measures. In these instances, people and states are pursuing communal forms of adaptation aimed at building networks of care that seek collective rather than fragmentary experience. They are, to put it differently, choosing to throw in their lot with others, and live through climate change together. Today, countries like Norway, Sweden and Germany are integrating climate threats into overseas development aid to help others adapt to a changing climate (Briggs and VanDeveer 2011) and towns like Totnes, England, and Hardwich, Vermont are designing social structures of resilience to endure the worst effects of climate change as whole communities committed to perpetually pursuing greater equality and justice within and outside their borders (McKibben 2010; Transition Town Totnes 2011). Such efforts accord with an alternative social science literature that suggests people often become more benevolent and altruistic in the face of communal hardship (see, for example, Scary 2011; Solnit 2009).

The difference between these two reactions is not written in the nature of a singular climate experience but turns on how different people make sense of climate harm – how they interpret their own brushes with climate hardship, senses of vulnerability, and predictions about the future. By attending to such understandings and experiences of climate suffering, radical resilience is not simply a last resort measure aimed at ameliorating climate hardship – a kind of compensation for those living on the frontiers of climate suffering – but a transformative strategy that shapes the entire configuration of climate responses. Put differently, radical resilience can tip the balance between survivalist and cooperative mitigation and adaptation strategies. It can encourage more compassionate forms of mitigation and

adaptation insofar as it offers the possibility of ushering in more just, humane conditions.

Conclusion

This chapter argues that mitigation and adaptation, as we conventionally understand and practice them, can no longer monopolize how we respond to climate change since we are now in the opening chapters of climate suffering. No matter how much we have tried hitherto to stop or avoid climate change or how much we intend to do so in the future, large numbers of people and untold species are already and will continue to suffer. I introduced the idea of radical resilience as a way to develop a political strategy that could speak meaningfully to this latest phase of climate reality and therewith reimagine our current regime of Climate Inc. If mitigation aims to address climate change as an emissions problem and adaptation works to minimize damage because so little mitigation progress has been made, radical resilience emerges as a response to climate suffering. It accepts climate hardship and embraces it as an opportunity to transform existing arrangements. In this sense, it seeks not to maintain or even slightly reform the status quo but, as the word radical implies, it works to alter the very roots of social, political, and economic conditions. It recognizes that suffering is both a consequence of climate change and, importantly, a cause. As mentioned, climate change is the atmospheric expression of a system of suffering. When we learn how to stop exploiting or extracting from each other (including from our relations of the more-than-human world), we will not only finally step onto the trail toward climate protection but will also make progress toward becoming more human.

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