Political Challenges of the Climate-Changed Society

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We are at a turning point when it comes to the political implications of climate change. Given the reality of a future in a climate-changed world, it is time for us—broadly as a species, but particularly as academics—to move beyond the foci of the last few decades on the politics of preventing climate change through global agreements. There is a growing literature on the obvious need to slow the impacts of climate change, develop postcarbon energy systems, and design new forms of global environmental governance. Beyond these immediate needs, however, climate change poses a range of new problems and requires a broader research agenda for a climate-challenged politics.

Key challenges of a climate-changed society include embracing adaptation, rethinking science politics, addressing vulnerable populations, managing anthropocene environments, and, just for good measure, reorganizing humans' currently destructive relationship with the rest of the natural world.

THE CHALLENGE OF SHIFTING FROM PREVENTION TO ADAPTATION

First is the challenge of admitting that we will not stop climate change. We already live in a climate-changed and climate-changing society; prevention is no longer an option. The natural systems that regulate climate on the planet—and that have provided stability for the last 10,000 years of human development—are clearly changing because of human activities (Steffen, Crutzen, and McNeill 2007). Adaptation is not an option; it is a necessity.

In 1992, when the UN Framework Convention on Climate Change (UNFCCC) was established, two categories of response to climate change were identified: prevention or mitigation on the one hand, and adaptation on the other. For the past 30 years, the political discourse of climate change, at a variety of levels from the UN down to cities and even universities, has been on attempts to reduce emissions and prevent harmful anthropogenic interference with the global climate system. We have failed this task.

Adaptation has been little mentioned and undefined. At the start of the UN process, adaptation was seen as "an unacceptable, even politically incorrect idea" (Burton 1994, 11), because to focus on adaptation was seen as an excuse to avoid the more difficult task of reducing greenhouse gas emissions. Concern for adaptation would be a moral hazard.

Nonetheless, we failed at prevention, even while avoiding talk of adaptation. And at this point it is not defeatist or hazardous to shift to adaptation—it is necessity. The new challenge is different, and probably more difficult. Yet even the recent, and important, establishment of a green climate adaptation fund in Durban omits a clear definition of adaptation.

To what do we have to adapt? *What* does an adapted society look like? *How* do we design a strategy to achieve adaptation? How do we think about, or frame, a sustainable adaptation? These are all open questions. The most popular concept now is resilience. As Adger, Brown, and Waters (2011, 696) define it, "[r]esilience is the ability of a system to absorb change while retaining essential function; to have the ability for self-organization; and to have the capacity to adapt and learn." Respond and adapt, but maintain functioning.

On the one hand, some potential exists here. Societies that manage for resilience can sustain "desirable pathways for development in changing environments where the future is unpredictable and surprise is likely" (Folke 2006, 254). Resilience sounds good, and it is optimistic.

And yet there are some key limitations in the idea of resilience—it shares characteristics of some of the systems that have brought us to our current predicament. Global capital has been resilient even after bringing about a crash of the financial system; it is still functioning, adapting, and shaping change (or nonchange). Carbon-based energy systems are resilient, thanks to the political power their profits bring. Power is incredibly resilient, ignorance is resilient, compromised politicians are resilient. Resilience is not, in itself, necessarily a redeemable feature.

Resilience can undermine other priorities. For example, some scholars of development politics are concerned that the concept takes the focus away from the development of human communities out of poverty (Cannon and Müller-Mahn 2010). A related concern is that a resilience discourse pushes people to simply adapt to, rather than understand and resist, the change foisted on them. Resilience, in this sense, can then be disempowering.

A growing concern for adaptation at the local level gives us hope. If many national governments are not preventing climate change, cities and localities are starting to think about how we adapt. As both the impacts of climate change and the necessary reactions to it become more localized, some opportunities for more challenging and engaging adaptive discourse and policies emerge.

CHALLENGING THE ENLIGHTENMENT: SCIENCE, POLICY, PROGRESS

The second challenge is to admit that climate change has undermined our narrative of the enlightenment—the dream that reason leads us to uncover truths, and those truths lead to progress and the improvement of human life. Greater than any other recent event climate change illustrates that power

corrupts and trumps knowledge—even the most careful and conservative science—on a global scale.

There are many important recent critiques of the relationship between science, knowledge, and progress that apply to our current situation, including Beck's (1992) idea that science creates risks that are not democratically or reflexively vetted, and Rorty's (1998) insistence that we decouple scientific knowledge and problem solving from the idea of progress. In this vein, climate change challenges people to rethink the whole narrative of human progress, and that is a deeply disturbing process.

Climate change illustrates an even more fundamental challenge to the relationship between science and society. We—and again I refer to both the species in general, but academics in particular—imagine we live in a rational, enlightened society. In such a place, experts identify issues to be addressed and goals to be reached in response to our creation of climate change. Scientific knowledge is respected and accepted (after peer review, of course), and policy is fashioned in response. This longstanding enlightenment narrative was embodied in the IPCC—the largest single body of scientific knowledge assembled. Yet the idea of good science leading to good policy

must increasingly be involved to bypass the denial machine, ask questions that merit attention, help interpret the significance of findings, integrate scientific knowledge with lay concerns and local issues, and prioritize and recommend policies.

This process already occurs. For example, Corburn (2009) discusses the postnormal science involved in the development of heat island policy in New York City. The process considered not only the reality of climate science and the designs of urban planners, but also the expertise and more local knowledge of state foresters, public works officials, local parks employees, and arborists. With each iteration of the policy, the revised set of recommendations became more legitimate, credible, and effective. Another broader example of such inclusive, yet science-based, policy making is the Alberta Climate Dialogue (ABCD nd.). The design involves extensive face-to-face citizen deliberation on the province's climate-change policy; citizens are exposed to the complexities of an issue, get a chance to question experts and advocates, deliberate with each other, and reach considered judgments.

Incorporating various knowledges in response to specific problems becomes more necessary as we come to terms with

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agreements is based on a two-fold fantasy: neither the acceptance of science nor the rationality of policy making work this way.

The reality is that there has been direct intervention explicitly designed to break the link between knowledge and policy. On climate, a powerful "climate change denial machine," as Dunlap and McCright (2011) call it, is in play—corporations and think tanks working to abuse the uncertainty of science, spread ignorance of the issues, and exploit a generalized distrust of science to derail a political response. Ironically, this industrial denial machine, and the political figures who support it, have damaged the ideals of the enlightenment more than any so-called postmodern theorist or environmentalist.

In response to this political reality, the scientific community churns out more data, hoping that more and better science will automatically translate into better policy in the face of the politicization and demonization of their work in the public sphere. But science, as Sarawitz (2004) stresses, cannot resolve disputes that are at root political or ethical.

The key adaptive challenge is to rebuild a constructive relationship between scientific expertise, the public, and policy development. An adaptive response to climate change must encompass a move beyond the standard model of one-way communication from science to the public, toward more dialogical engagement encompassing experts, advocates, and various other publics and knowledges: ethical, cultural, and more. The science would continue to be the preserve of scientists. Publics

the necessity of adaptation. Democratizing knowledge making and dissemination may be a way to rewrite the traditional science-to-policy model, adapt to climate change, and challenge the denial industry.

THE CHALLENGE OF JUST ADAPTATION

Third, climate change is already making the world's most vulnerable people even more so, and a major challenge is our dedication to justice in an age of adaptation. Climate justice has been a focus for political scholars, but mainly as a normative framework for global prevention policies. We need to refocus conceptions of climate justice as a frame for adaptation.

Here, there is more than the complexity of climate change to address. Justice itself is a contested concept with a variety of meanings and implications, and many of these are apparent in the original agreement of the UNFCCC. Nations agreed to "protect the climate system for the benefit of present and future generations of mankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capacities." That one packed sentence includes a range of assumptions about justice:

- Equity was to be a basic principle of international climate agreements.
- The responsibility to address climate change would be based, in part, on causal responsibility, even in the face of the ideal of equity.

- Actions required of nations also would be based in their different capacities to act.
- There is a responsibility of governments to benefit both present and future humans.
- This responsibility includes people beyond one's own borders.
- The climate system benefits and supports human life (so the role of the natural world in the provision of justice is acknowledged).

The first three points illustrate the ongoing conflict between the ideal of equity, on the one hand, and historical responsibility and differential capacity, on the other. These competing notions of justice did not undermine the possibility of international agreement, but often were used to justify disagreements on prevention.

Shifting to adaptation, the first challenge is the expansion of the community of justice. Given the delay between emissions and their impact, our (in)actions affect people in the future. Climate change is also undermining the environment of vulnerable people across the globe, for example, in Bangladesh, the Horn of Africa, small island states, and, most recently, Staten Island. Our responsibilities of justice in an age of adaptation extend over vast stretches of both time and geography.

The admission that the climate system supports human life is also a challenge to justice and policy in an adapting society. Climate change undermines the environments that

issue of climate justice is the interruption of the functioning and integrity of both human and ecological systems (Schlosberg 2012a).

How do we address the challenge of climate justice in an age of adaptation? It would be productive to start with the recognition that different people, in different communities, in different environments, experience vulnerability to climate change in different ways. Combine that premise with one of the major demands of climate justice groups—participation and voice—and a formula for adaptive climate justice emerges. The basic rights of local participation and deliberation can help us understand and determine the distinct and local environmental needs of various communities and plan for adaptation (Schlosberg 2012b).

THE CHALLENGE OF MANAGING THE ANTHROPOCENE

Fourth, climate change—and, more broadly, the new era of a human-directed nature, the anthropocene—challenges us to develop a new approach to environmental policy and management. What is meant by "the environment" is now ever-changing, with human actions affecting the makeup, functioning, and evolution of global and local ecosystems. The nourishing and stable Holocene, scientists argue, could have continued for another ten to twenty thousand years, if not for the interference of humans. Instead, we have entered a new era of human impact and control, the anthropocene—ultimately, an "unintended experiment of humankind on its

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provide for several basic human needs. More people will suffer from heatstroke and infectious diseases, drought and crop failure, flooding and destruction of homes and infrastructure, and involuntary relocation. In this sense, climate change is an injustice that violates existing human rights to life, health, and subsistence (Caney 2010).

The connection between justice and environment should now be clear: human beings have a right to an environment that supports their basic needs. That assumption is in the original UNFCCC text, and it is how many climate justice activists articulate the issue. More recently, climate justice scholars have begun to argue for environmental rights (Vanderheiden 2008) or an environment necessary to sustain the basic capabilities of human beings (Holland 2012). Climate justice in an age of adaptation means acknowledging that social justice is not only about the inequitable distribution of environmental risks or bads; a functioning environment actually creates the conditions for the provision of social justice.

But a notion of climate justice might go even further. Humans and communities are not the only vulnerable populations. Climate change also undermines the environment that supports other species and their ecosystems. Here, the central

own life support system" (Steffen et al. 2007, 614). How do human beings manage the new world we have constructed, or deconstructed? How do we understand and respond to those impacts and react to, redesign, and take some sort of conscious control over systems we now acknowledge we already run?

The anthropocene has consequences for the founding principles of environmental management. The connection to historical, stable conditions is deeply embedded in terms like "natural" sciences, "conservation" biology, "restoration" ecology, where the past is a "standard," indeed, the basis of how things can or should be. And yet the use of the past—a chosen historical moment to represent a more "natural" world to be preserved, carefully used, or restored—is no longer an option. It is no longer possible to look back to history to guide new practices of management or restoration. In creating the environment of the future, the human-induced anthropocene has made the past irrelevant.

The challenge to environmental values cannot be overstated. For one, the era of preservation as the basis of environmental management has ended. In an anthropocene, a hands-off, set-aside, wilderness-based approach is tainted by

the reality that any such place will be thoroughly affected by human behavior, even if people never physically enter it. Cronon (1995) famously made the argument that "'nature' is a human idea" and wilderness "quite profoundly a human creation." Although viciously attacked by purist wilderness advocates, the argument was prescient; whatever one thought of Cronon's position at the time, the anthropocene makes the claim of a human-made nature true. There is no wilderness, and it is now even less relevant as a managerial guide.

Higgs (2012) sees some form of "historical fidelity" as a virtue appropriate to a rapidly changing nature. The past may be irrelevant as a strict map or blueprint for environmental management, but our understanding and value of that past remains crucial—as memory and value, rather than model. History is one element of knowledge as we focus on removing sources of degradation and restoring ecological processes. The point is to focus on how ecosystems evolve and work and on longstanding cultural relationships with landscapes to broaden our potential responses to shifting ecological conditions.

Some people think human beings should take on the anthropocene with more determination and intentional design.

Providing energy, for example, entails massive outputs of carbon dioxide; pollutes the landscape, rivers, and air with various chemicals and gases; and alters the climatic system that has been fairly stable for the past ten thousand years: this is a symptom that the relationship with our environment is dysfunctional and destructive. Energy is only one example; the same holds true about the way we feed, clothe, and technologically accessorize ourselves as well.

An alternative now emerging in many movements and practices is a form of sustainable materialism, and the approach offers a model of response to the climate-challenged society. The goal is to replace unsustainable practices, and forge alternative, productive, and sustainable institutions to provide for basic needs. One obvious development centers around food (Gottlieb and Joshi 2010). Rather than buying industrialized vegetables flown around the globe, people are more involved in growing and sharing food in community supported agriculture, collective gardening, urban gardens, ethical animal rearing, and farmers' markets and transforming their relationship with food, its production, transportation, and consumption. This practice is not an upper-class, white initiative, as was the

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Rather than deny human control over the global environment, they embrace the idea. Environmental management of our current destructive interventions could entail taking the reins in hubristic planning for geoengineering protections from climate change. We may have unintentially brought about an anthropocene, but we can use our knowledge to control it, or, more likely, lessen the worst of its impacts. Perhaps we should focus on engineering human beings—rather than geoengineer entire earth systems. Why not human engineer for smaller footprints (literally) or smarter or more sympathetic brains (Liao, Sandberg, and Roach 2012)? Of course, human beings tend to believe we have more knowledge and ability than we actually do—the complexities of natural systems and feedbacks may elude us. Given our current impacts and the uncertainties they embody, the challenge is our ability to let precaution direct our interventions.

THE MATERIALIST CHALLENGE

The final challenge takes a different tack on our relationship with the rest of the natural world; rather than embrace human domination, many groups focus on changing the currently destructive relationship with the nonhuman and, literally, embody an alternative. Here, the key is that, in bringing climate change and other environmental ills on ourselves, how we immerse ourselves in the natural world and how we provide for our basic needs is not working. Our relationship with nature is undermining the lives we have constructed.

slow food movement in its initial years. Some of the most innovative food justice movements are in poor communities in cities like Detroit or Milwaukee, or in the continuation of movements against globalized agriculture in India. Whether based in a response to hunger, food insecurity, and food deserts in inner cities, or a more direct response to the carbon output of industrialized agriculture, or the loss of traditional foods, the goal is the same: creating new food systems and sustainable material relationships with the natural world. Similar movements have grown around community energy generation and crafting/making.

Sustainable materialist movements can be framed in at least three important ways—each a response to a different challenge. First, these practices provide a way for communities and individuals to respond to their own powerlessness, and to reclaim an ability to shape their own lives. The food justice movement, for example, often refers to food *sovereignty* as a key goal (Alkon and Agyeman 2011, 8). Foucault famously described power as something that flows through people and relationships, reproduced and maintained in the fabric of everyday practices. These new materialist movements illustrate a growing resistance to participating in the flows of power that reproduce practices that damage ecosystems or contribute to climate change; they aim to create a sustainable, embodied form of empowerment.

Second, these movements represent a new form of materialism. As Inglehart (1997) has argued, environmental concerns

are most often seen as postmaterial values arising after basic needs are met. But those values are not being represented politically or in everyday life. The response has been more direct involvement in sustainable material practices, and the development of local institutions focused on material flows. This is a new materialism, not just a postmaterialism.

Third, and related, this focus is aimed at sustainability. The concern is with the flow of food, matter, and energy from the natural world, through our productive processes, into and through our bodies, and back into the nonhuman realm. The point is to reconfigure flows that currently undermine ecosystems into ones that support, or minimize the negative impact on, them. Movements around new materialist practices illustrate resistance to the idea that human development must be separate from nature.

Sustainable materialist movements are actively trying to replace a politics of separation with one of immersion, a politics of the domination of nature with one that recognizes human beings as animals in embedded material relationships with ecosystems and the nonhuman realm. It is a challenging politics for an age of adaptation.

CONCLUSION

Can scientific knowledge be respected again, and brought into reasonable policy conversations? Can governments, civil society, and individuals organize and respond to adapting to a rapidly changing environment? Can we take differential vulnerabilities and the needs of justice seriously as we develop adaptation plans? Can we actually construct material relationships with the rest of nature in a way that sustains us? Those are the challenges that interest me as we—both human beings in general, and environmental academics—adapt to climate change. Adaptation is not simply a challenge; it gives us a lot to do.

ACKNOWLEDGMENTS

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