CULTURE, POLITICS AND CLIMATE CHANGE

How information shapes our common future

Edited by Deserai A. Crow and Maxwell T. Boykoff

Routledge Taylor & Francis Group
LONDON AND NEW YORK
earthscan from Routledge
2014

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CLIMATE SCIENCE, POPULISM, AND THE DEMOCRACY OF REJECTION

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This chapter considers what popular distrust of climate science might tell us about the politics of democracy in the United States. I argue that such distrust can be usefully understood as part of a long tradition of popular suspicion of organized power. Whereas this tradition has usually focused on governmental power, those rejecting climate science take aim at the power of science. To be sure, they are usually mistaken in their scientific claims, they offer few constructive proposals, and their populist rhetoric echoes a broader anti-democratic tendency in contemporary politics. But unlike many climate policy advocates, climate science rejectionists have helped call attention to the economic and political dimensions of climate science and its role in public policy. In these respects, the rejection of climate science both illuminates and exacerbates contemporary dilemmas of democracy.

Introduction

What does climate change mean for democracy? According to many commentators, climate change is giving democracy a serious thrashing. For former US Vice President Al Gore, global warming is "the biggest failure of democratic governance in history" (Gore, 2009, p. 303). Famed British scientist James Lovelock suggests that climate change may require that we "put democracy on hold for a while" (Hickman, 2010). And philosopher Philip Kitcher calls the failure of climate policy "a huge failure of worldwide democracy" (Kitcher, 2011, p. 243). For many today, democracy is an inappropriate and ineffective political system for responding to climate change (Shearman & Smith, 2007).

Although the question of whether and how democracies can effectively tackle climate change is crucially important (Held & Hervey, 2010), it often obscures the equally important question of how the science and politics of climate change may

be shaping what democracy means to people around the globe. As Mike Hulme (2009a), Clark Miller (2004), Sheila Jasanoff (2010), and others have argued, climate change has become an arena of controversy in which the meaning of various values and ideas is being worked out. Climate change is not just a policy problem, nor just a geophysical phenomenon, but a site of cultural and conceptual change. Both climate science and climate policy are intertwined with implicit and explicit conceptions of what democracy is or should be. Whether or not climate policy needs democracy, it is likely to transform it.

Focusing on the United States, this chapter shows how popular distrust of climate science and policy has become intertwined with the politics of democracy. I argue that those who reject mainstream climate science call attention to political dimensions of science often obscured by climate policy advocates. At the same time, however, rejectionists are often seriously misinformed about climate science, and they offer few constructive proposals for how science might better inform policy making. They also tend to embrace a corrosive populism, implausibly claiming to be the sole authentic spokesperson of the people. Climate science rejection thus both illuminates and exacerbates some of the key dilemmas associated with the politics of climate change.

More specifically, the views of many climate policy advocates and their critics on three key concepts – democracy, representation, and science advice – often amount to different sides of the same coin. They disagree over what democracy entails, but each assumes a partial and incomplete view of democracy that arguably depends on the other. They disagree over who truly speaks for the people, but they share a populist conception of political representation. And they disagree over whether climate science should be allowed to influence political decisions, but each assumes a linear conception of the relation between science and politics.

By arguing that climate policy advocates and their critics share several key assumptions, I do not mean to suggest that their views are equally well justified, nor to dispute the need for serious policies to address climate change. Rather, the aim of this chapter is to cast an alternative light on familiar dilemmas, thus opening up new questions for analysis. My goal is not to describe or explain the rise of climate science rejection or the anti-environmental movement. Others have carefully documented the loose network of fossil fuel interests, conservative foundations, think tanks, mass media outlets, and contrarian scientists that have long sought to create a false appearance of scientific debate over the basic facts of global warming (Dunlap & McCright, 2011; Jacques, 2009; Oreskes & Conway, 2010). Rather than repeating their efforts, I want to briefly explore the meaning of climate science rejection for how we think about democracy and democratic responses to climate change.

Climate science rejection

Scientific knowledge and scientific experts have long played an ambiguous role in the environmental movement, and different branches of environmentalism have adopted very different perspectives on the natural sciences (Beck, 1992, pp. 24–27, 163; Bocking, 2006; Yearly, 2010). On one hand, environmentalists have been among the most trenchant critics of the humanist arrogance and technocratic ambition often associated with modern science and engineering. Environmentalists have offered powerful arguments against the reduction of distinctly moral and political issues to technical problems of risk analysis and management. On the other hand, environmentalists have relied on the environmental sciences in at least two ways. First, effectively addressing a wide range of environmental problems depends in part on science. Many environmental problems, including nuclear radiation, toxic pollution, and climate change, cannot be directly perceived by the human senses, so without science we would not know about them in the first place. People can see climate change impacts, of course, ranging from shorter winters to shifts in animal habitats, but to see them *as* the (partial and possible) result of climate change requires climate science. Second, and of primary concern here, environmentalists have often relied on science to design, justify, and promote policy responses to climate change.

The 2007 report of the Intergovernmental Panel on Climate Change (IPCC, 2007) concluded that the existence of global warming is 'unequivocal,' and that it is more than 90 percent likely that the global warming observed during the past 50 years is largely caused by human activity. The world's major scientific institutions concur. Significant uncertainties persist about the timing and extent of local impacts, as well as the precise role of deep ocean warming, atmospheric aerosols, water vapor, and other factors. But there is widespread scientific consensus on the basics. Nonetheless, in the United States, beliefs on global warming vary widely according to self-identified political affiliation. In a 2011 poll, when asked whether global warming is happening, majorities of Democrats (78 percent), Independents (71 percent), and Republicans (53 percent) said yes, but that view was shared by only 34 percent of self-identified supporters of the libertarian-conservative Tea Party. (For non-US readers, the Tea Party is not an official political party, but a loosely organized and highly influential network of activists that rose to national prominence in early 2009.) A substantial majority of Democrats (62 percent) said that global warming is caused mostly by human activities, but that view was shared by a minority of Republicans (36 percent) and even fewer Tea Party supporters (19 percent) (Leiserowitz et al., 2011, p. 7). A more recent survey (Leiserowitz et al., 2013) found that 70 percent of Americans believe that global warming is real and should be addressed, but 30 percent are either 'doubtful' (uncertain whether global warming is occurring, but if so, they say it is due to natural causes: 13 percent), 'disengaged' (unaware of the issue: 9 percent), or 'dismissive' (convinced that global warming is not occurring: 8 percent). Outside the US, the situation looks rather different. According to a 2010 opinion survey of 111 countries, "People nearly everywhere, including majorities in developed Asia and Latin America, are more likely to attribute global warming to human activities rather than natural causes" (Ray & Pugliese, 2011).

Many commentators see the distrust of climate science among US conservatives as one manifestation of a larger phenomenon of 'denialism,' loosely defined

as the rejection of mainstream science for ideological purposes (Diethelm & McKee 2009; Dunlap & McCright, 2011; Specter, 2009). Like all labels, the term 'denialism' is problematic (Boykoff, 2011, pp. 159–164; Lahsen, 2013; Wihbey, 2012). It polemically evokes the case of Holocaust deniers, and commentators often apply it indiscriminately to anyone critical of mainstream science. As one author aptly remarks, "Denial is the secular form of blasphemy; deniers are scorned, ridiculed and sometimes prosecuted" (Skidelsky, 2010). Moreover, most of those who accept mainstream climate science do so without any more critical investigation than those who reject it. In this chapter, I use the less polemical if still imperfect phrase 'climate science rejection' – or for convenience 'rejectionism' – to identify people who entirely reject the notion of anthropogenic climate change.

Commentators have offered various explanations for climate science rejection. Some see the primary cause in naked economic interest. The oil and coal industries have long funded bogus studies on climate change, copying earlier efforts by tobacco companies to 'manufacture doubt' about mainstream science (Jacques, 2012; Oreskes & Conway, 2010). Another plausible explanation is religious and cultural affiliation: many Christian conservatives link their rejection of climate science to a similar rejection of evolutionary theory, and such rejections may be best understood not as epistemic claims but as expressions of group identity (Revkin, 2011).[1] Similarly, research on 'cultural cognition' suggests that people with hierarchical and individualist values who tend to reject government regulation also reject climate science, because they assume a close link between them (Kahan, 2010). Others see denialism as a psychological defense mechanism for coping with troubling facts; it is not primarily a matter of 'denying' climate change, but of being 'in denial' about it – a phenomenon apparent not only among those who reject climate science but also those who accept it but fail to respond in any serious way (Norgaard, 2011; Lertzman, 2008). Despite their different explanations of what causes climate science rejection, most commentators agree that it threatens the effective resolution of complex public problems. Without disputing that view, I want to consider the possibility that rejectionism can also tell us something about the relationship between climate change and democracy.

Climate science and democracy

Scholars who study wealthy democracies have long observed a decline in citizen participation in formal state institutions like elections and political parties, coupled with a decline in public trust in government. But such distrust does not amount to citizen apathy, as many assume. Rather, a combination of high public expectations and low governmental performance produces 'critical citizens' who are frustrated with mainstream politics precisely because they are *not* apathetic (Norris, 2011; Lertzman, 2008). Today's skeptical, critical citizens express their demands in a highly diverse, de-centered political landscape, including non-electoral state institutions like public hearings, stakeholder processes, and courts; non-state civil society associations like religious organizations or environmental groups; and non-institutionalized forms of participation associated with social movements, such as protests, demonstrations, strikes, boycotts, online activism, and so on (Dalton, 2004; Rosanvallon, 2008, pp. 18–22; Warren, 2003).

A useful framework for making sense of this diverse participatory landscape appears in Pierre Rosanvallon's distinction between three elements of modern democracy: electoral-representative government, public deliberation, and 'counter-democracy' (Rosanvallon, 2008, pp. 313–316). Democratic theorists have devoted intense effort to studying public deliberation, while empirical political scientists have tended to focus on electoral democracy, or what Rosanvallon calls the 'democracy of proposition': the pursuit of collective goals through the delegation and exercise of power. Taking these two elements, a common view of democracy focuses on the electoral authorization and accountability of representatives, informed by various kinds of public deliberation. But equally important is what Rosanvallon calls counter-democracy or the 'democracy of rejection' (Rosanvallon, 2008, p. 15). Rather than constructive efforts at collective self-government, counter-democracy involves attempts to monitor, block, or evaluate such efforts. Through various forms of public oversight, prevention, and judgment, citizens limit and constrain the same public officials they authorize through elections. Indeed, the term 'counter-democracy' is potentially misleading, since the practices in question do not oppose democracy as such but are actually a key part of it.

Counter-democratic institutions and practices have a long history, predating the establishment of modern representative democracy. Consider the medieval maxim of popular consent: 'That which is the concern of all must be approved by all.' Today this notion is usually conceived in terms of positive consent, as a matter of popular sovereignty and universal suffrage. But it was long understood in negative terms, such that consent was taken to consist in the absence of popular opposition, rather than citizen approval of public officials or policies.

> All politics was thus organized around the idea of *prevention*. It was the power to say no, the potential to remove the Prince or his administrators that informed the earliest conception of legitimate and viable social intervention in the political realm.
>
> (Rosanvallon, 2008, p. 127)

Or consider the key role of popular judgment in ancient Athens, where a citizen was expected not only to participate in the Assembly, which discussed and adopted laws and policies, but also in randomly selected political juries. The latter evaluated citizens accused of corruption, negligence, or impiety, as well as those charged with promoting laws later deemed imprudent or against the public interest (Rosanvallon, 2008, pp. 195–202). More recent examples of counter-democratic institutions include the traditions of parliamentary opposition and investigation, internal and external audit and evaluation mechanisms, whistleblowing, mass media scrutiny, and judicial review.

The democracy of rejection is thus far from new, but it has become especially prevalent in today's advanced democratic societies. Most relevant here is the rise of critical social movements and civil society organizations. To be sure, social movements generally involve both critical and constructive elements. They denounce racism, sexism, or environmental destruction, for example, while also promoting more enlightened practices. But many recent protest movements, while perhaps advocating a broad vision of social change, show little interest in promoting their goals through established political institutions. According to one journalist's account, many protesters today exhibit a "wariness, even contempt, toward traditional politicians and the democratic political process they preside over" (Kulish, 2011). The recent Occupy movement is a case in point. Commentators differ on whether it is a weakness or strength of the movement that it lacks a unified policy agenda or a strategy for building alliances with public officials, but it seems clear that Occupy activists reject politics as usual (Gitlin, 2012). Indeed, as Rosanvallon points out (2008, pp. 14–15, 183–185), oppositional movements have a structural advantage: it is easier to mobilize citizens to reject a policy or institution than to agree on one. Blocking a proposed policy offers a clear victory, while the criteria for successful policy are far more ambiguous.

Now, what happens when the democracy of rejection is directed not against public officials, institutions, or policies, but against scientists and scientific knowledge? Rosanvallon does not consider popular rejection of mainstream science as an example of counter-democracy, but it offers a powerful illustration of his argument. Those who reject climate science are not best understood as anti-democratic, but as implicitly embracing a particular element of democracy.

Modern science has served a wide range of functions in the construction of liberal-democratic states (Ezrahi, 1990). In the eighteenth century, for example, public demonstrations of experimental science offered a model of rational discussion that played a key role in constituting the liberal-democratic public sphere. The practical application of the same scientific principles to diverse situations seemed to vindicate the liberal-democratic faith in human equality. Those who reject mainstream climate science implicitly accept this longstanding view of science as constituting political life – if they didn't, they wouldn't need to challenge climate science and the political aims associated with it. Indeed, rejectionists seem acutely aware of the political stakes associated with climate science. Whereas environmentalists tend to emphasize normative questions regarding future generations, vulnerable populations, and threatened ecosystems, rejectionists often highlight normative questions associated with climate science itself.

One set of questions involves potential conflicts of interest among climate scientists. Anti-environmentalists have long argued that climate change is little more than a cash cow for climate scientists and their liberal allies, above all the jet-setting Al Gore. In August 2011, for example, Texas Governor Rick Perry told an audience, "I do believe that the issue of global warming has been politicized. I think there are a substantial number of scientists who have manipulated data so that they will have dollars rolling into their projects" (O'Sullivan, 2011). Perry offered no evidence for this charge, and of course he said nothing about the interest conflicts of those who dispute mainstream climate science while funded by the fossil fuel industry. Nonetheless, the question of conflicts of interest among climate scientists is important. When the InterAcademy Council examined the policies and procedures of the IPCC in the wake of the 'climategate' e-mail scandal, it found that the IPCC lacked a conflict-of-interest policy. It also noted that questions had been raised "about the IPCC Chair's service as an adviser to, and board member of, for-profit energy companies ... and about the practice of scientists responsible for writing IPCC assessments reviewing their own work" (IAC, 2010, p. 53) The Council recommended the adoption of a rigorous conflict-of-interest policy, as well as a series of other reforms to ensure greater public accountability and transparency in climate science (IAC, 2010, p. 53; Beck, 2012).

Those rejecting climate science have also sometimes raised important questions about the economic stakes of proposed climate policies. Conservatives in the US have long argued that the entire notion of climate change is part of a left-wing scheme to undermine American free-market capitalism, economic growth, and national sovereignty (Dunlap & McCright, 2011). Analyses of the economic costs of climate change vary enormously, of course, in part because key variables are not subject to definitive analysis but depend on value questions. Calculating whether the future benefits of climate mitigation policies justify their current costs, for example, requires establishing a social discount rate, which involves an inherently contestable decision regarding the importance of current generations as compared to future generations (Hulme, 2009a, pp. 120–123). Those rejecting mainstream climate science have generally not promoted thoughtful debate about such questions, but they have occasionally put them on the table. For example, in a speech in April 2009 on the floor of the US House of Representatives, Representative Michele Bachman of Minnesota said,

> Carbon dioxide is ... not harmful. It is a part of Earth's life cycle. And yet we're being told that we have to ... reduce the American standard of living to create an arbitrary reduction in something that is naturally occurring in the earth.
>
> (Dade, 2011)

And Sarah Palin (who once supported policies to address climate change) wrote in 2009 that "we can't say with assurance that man's activities cause weather changes. We can say, however, that any potential benefits of proposed emissions reduction policies are far outweighed by their economic costs" (Palin, 2009; see also Robinson, 2009). With respect to such arguments, Naomi Klein rightly argues that "the left is going to have to learn from the right" (Klein, 2011, p. 13). Libertarian-conservatives are wrong to reject mainstream climate science.

> But when it comes to the real-world 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 economic system, [they] may be in considerably less denial than a lot of professional environmentalists, the ones who paint a picture of global warming Armageddon, then assure us that we can avert catastrophe by buying 'green' products and creating clever markets in pollution.
>
> (Klein, 2011, p. 14)

As these examples suggest, and despite appearances to the contrary, the primary concern of those who reject mainstream climate science is usually climate policy rather than climate science itself (Forsyth, 2012, p. 20). Anti-environmentalists are clearly mistaken about climate science, but they sometimes highlight political aspects of the issue neglected by climate policy advocates. Unlike some environmentalists, they rightly portray climate change as a distinctly political problem that should not be reduced to implementing the conclusions of climate science. Consider Al Gore, who in September 2011 introduced his "Climate Reality Project" by saying, "Fossil fuel interests have money, influence, control. But together we have something they don't: reality" (Gore, 2011a). Gore here suggests that reality itself supports his policy proposals. Gore echoed this sentiment in his concluding remarks on the event, when he insisted, "Climate change is not a political problem. It is a human problem" (Gore, 2011b). Like the reality discerned by climate science, Gore here suggests that "human" problems are indisputable – and hence, non-political. Anti-environmentalists may be mistaken about everything else, but they are right to insist that climate change is a political issue. And by rejecting climate science, they implicitly embrace and expand the tradition of counter-democracy. In this respect, they suggest a different but no less valuable conception of democracy than environmentalists who focus on electoral politics and public deliberation.

Climate science and populist representation

The discussion so far suggests that conceiving climate rejection as a form of counter-democracy may help open up new and important questions for political discussion. In this respect, climate rejection might inadvertently promote the effectiveness and legitimacy of democratic institutions. At the same time, however, as a form of counter-democracy, climate rejection threatens democratic institutions when it becomes infused with populism (Rosanvallon, 2008, pp. 22–24, 267–273).

Populism is a much contested concept with an ambiguous relationship to democracy (Canovan, 2005; Laclau, 2005). As Rosanvallon conceives it, populism employs the fiction of a unified and homogenous people to bolster claims to be the people's sole authentic spokesperson. Populists thus attack 'foreigners,' 'immigrants,' and other supposed 'others,' as well as public officials

and other elites. Although claiming to speak for the people, populism "strikes at the representative principle itself," because it tries to erase the incomplete and divided quality of representation in pluralist societies (Rosanvallon, 2008, p. 266). Like other recent theorists of representation (Urbinati & Warren, 2008), Rosanvallon argues that no particular representative claim should be taken as the authentic voice of the people. Anyone claiming to speak for others should not aim for direct correspondence between their claims and an allegedly unified public will. In democracies today, 'the people' is constructed in the process of representation. Populists attempt to short-cut the laborious and contentious process of constructing the people, portraying themselves as the people's only true representatives.

When infused with populism, counter-democracy's various modes of distrust become pathological. Critical oversight of public officials becomes "a compulsive and permanent stigmatization of the ruling authorities" (Rosanvallon, 2008, p. 268). Efforts to resist selected legislative acts expand into a compulsive desire to block any government action at all. And the people as judges become mired in vindictive accusations of public officials, welfare state recipients, illegal immigrants, and so on. The melding of populism and counter-democracy creates "a form of political expression in which the democratic project is totally swallowed up and taken over by counter-democracy" (Rosanvallon, 2008, p. 273). As a result, "The citizen is transformed into an ever more demanding political consumer, tacitly renouncing joint responsibility for creating a shared world" (2008, pp. 253–254).

Is the popular rejection of mainstream climate science populist in this sense? Although rejectionism as such may not constitute a political movement, it seems to be a key component of a loose network of conservative, libertarian, and Christian fundamentalist think tanks, foundations, public officials, and activists, concentrated in the United States but extending to other countries around the world (Jacques, 2009). And rejectionism seems to be associated with the typical markers of a certain version of populism. Those rejecting climate science appeal to everyday common sense, when they insist that a cold winter means that global warming cannot be happening. They present themselves as defending popular interests, when they argue that carbon-dioxide regulation kills jobs. They rely on celebrity politicians like Sarah Palin. And most importantly, they claim to be the authentic voice of the sovereign people or "real Americans," as Palin famously put it.

The Tea Party movement, for example, bears many trappings of populism, and it has been a key locus of climate rejection in the United States. Funded and promoted (some say created) by conservative foundations and political elites, a large percentage of Tea Party activists reject climate science, as noted previously. More generally, many Tea Partiers see skepticism toward experts as key to their participatory conception of democracy. "To guard against possible bamboozlement – and to demonstrate their own virtue and skill as informed democratic citizens – Tea Party members arm themselves for confrontations with their legislative representatives by reading particular bills themselves" (Skocpol & Williamson,

2012, p. 53). Tea Party activists have been excellent at organizing rallies, meetings, and newsletters, and they show a general willingness to learn the nitty-gritty of everyday politics. Whereas educated liberals know a lot about policy content, Tea Party activists know how Congress and their state legislatures work, how to work with local government boards and committees, and how to get public officials elected and policies adopted. "They know process, but flub content – the exact opposite of the academic liberals" (Skocpol & Williamson, 2012, p. 198). Tea Party activists link their activism and ignorance to counter-democratic attacks, not on government as such, but on the 'undeserving poor' (primarily immigrants and minorities) who they believe benefit from government programs at the expense of more deserving 'real Americans' like themselves. Like other populists, Tea Partiers claim to be the sole authentic spokespersons for the people.

What is especially interesting, however, is that this populist view of democracy appears not only among those who reject climate science, but within the broader discourse of climate change itself. The common framing of climate change in both global and apocalyptic terms (Nisbet, 2011) arguably fosters a sort of 'climate populism' (Swyngedouw, 2010). The global framing of climate change appears in the prevailing focus on long-term targets for global carbon-dioxide and average temperature levels, as well as the dominance of global circulation models as the primary scientific approach to understanding climate change (Bocking, 2006, pp. 111–116). Indeed, the very notion of climate as a global phenomenon rests in part on the painstakingly established legitimacy of global political institutions like the IPCC (Miller, 2004). By reducing global warming to a problem caused by the universal physical properties of greenhouse gases, the IPCC addresses climate change primarily at the global scale (Demeritt, 2001). The issue has often been framed as a matter of protecting a 'fragile planet,' not in terms of equity and justice among people or nations. And the global focus diverts attention from the national, regional, and local venues where democracy has historically been most vibrant.

The apocalyptic framing appears in the use of catastrophic imagery of sea-level rise and natural disasters to mobilize people to 'save the planet' (Hulme, 2009a, pp. 345–348). The film *Please Help the World* (Poulsene, 2009), shown to delegates at the 2009 Copenhagen Climate Change Conference, is one among many examples. Framing climate change this way obscures the enormous differences in vulnerability among different populations around the globe. Billions of poor people are *already* highly vulnerable to climate, regardless whether the climate is changing or not, and regardless whether any changes are caused by humans.

In each of these respects, as Erik Swyngedouw (2010, pp. 221–224) argues, the populist framing of climate change reduces the wide range of factors contributing to climate change to a single 'enemy of the people': carbon-dioxide. The enemy is conceived as an outsider, and the solution lies in its elimination, rather than in changing the sociotechnical systems that produce it. In contrast to conceptions of politics that emphasize conflicts of interest and call on particular constituencies to bring about a desired change, populist climate politics addresses itself to all people everywhere. Elites are asked to answer the 'call of the people,' but the vast differences in what people want or need around the world remain unaddressed. In this respect, populist climate politics "ultimately reinforce processes of de-politicization and the socio-political status quo" (Swyngedouw, 2010, p. 214).

Both advocates and critics of climate science have thus implicitly adopted a populist framing of climate change. Among the advocates, populism limits the scope of climate policy; among the critics, it undermines the possibility of any constructive political action at all. Rejectionists illuminate aspects of the politics of science neglected by many environmentalists, but they generally fail to offer proposals for building a shared world in light of the emerging dilemmas associated with climate change.

Climategate and the politics of science advice

In the fall of 2009, somebody either hacked or leaked over 1,000 e-mails written over 15 years by climate scientists at the University of East Anglia. Among other things, the e-mails showed leading climate scientists refusing to share their data with critics, evading Freedom of Information Act requests, and conspiring to manipulate peer review processes to keep their critics from being published in leading journals. Conservative commentators endlessly and misleadingly quoted a few select e-mails to argue that climate science was corrupt to the core, and hence, that global warming is a hoax. Environmentalists replied, correctly, that the e-mails did not cast doubt on the basic conclusions of mainstream climate science. After multiple governmental inquiries, the scientists involved were largely exonerated (Randerson, 2010; Tierney, 2009). What few noticed is that the e-mails revealed not only 'scientists behaving badly,' but also a particular image of democracy.

The scientists apparently worried that the minor uncertainties in their calculations, if revealed to the public and exploited by industry-funded critics, would undermine popular support for both climate science and climate policy. Given the history of the issue, their concerns were not unfounded. However, they appear to have mistakenly assumed that maintaining public support for *climate policy* requires eliminating uncertainties from public presentations of *climate science* (Hulme, 2009b; Sarewitz, 2010). In this respect, the climate scientists assumed a 'linear model' of science advice, a view that has long dominated science advisory processes (Pielke, 2007).

The linear model is the idea that science can solve social problems only if it remains insulated from society. It assumes a direct, straight-line connection between scientific knowledge and public policy. According to the linear model, scientific knowledge both precedes and remains independent of political decisions. The basic assumption is that science comes first, followed by policy. First get the facts straight, then act. Moreover, the linear model assumes that once scientists reach consensus, public policy flows directly from the science. The linear model of science and policy has long been a prominent part of the politics of climate change (Beck, 2011).

The linear model of science advice may be appropriate in certain contexts, when there is consensus on both scientific knowledge and political values (Pielke, 2007). In such cases, scientists can inform politicians about the best means for pursuing a given goal, and politicians can then simply implement the recommended means. But most policy problems today are not like that. There is an irresolvable uncertainty to much of the science involved in current policy debates (Sarewitz, 2004). There is no single best solution that is best according to all relevant criteria. Policy scholars call these 'ill-structured problems' or 'wicked problems' (Turner, 2003). In most sociotechnical controversies today, the combination of technical uncertainty and political disagreement means that public policies either cannot or should not be determined by experts alone.

Most importantly, when you're dealing with a wicked problem, and scientists or politicians adopt the linear model of science advice, they practically invite their opponents to attack the science (Pielke, 2007). If you offer science as the single best reason for your preferred policy, you create an incentive for those who disagree with you to find problems with the science. The result is that public debate focuses on whether the science is credible or not. Science becomes a proxy battleground for politics. The irony is that both sides in the debate share the assumption that science drives policy. What gets lost is an honest debate over competing values and interests.

We have seen this repeatedly with regard to climate change. When environmentalists make their case for climate policies, they usually point first of all to climate science. They emphasize the growing evidence that human actions are causing climate change; they point to the IPCC reports; they fret about public ignorance of climate science. They occasionally talk about social and political values, such as the responsibility of rich countries for past carbon-dioxide emissions, the right of poor countries to economic development, our obligations to future generations, and so on. But these sorts of 'soft' arguments often take a back seat to the 'hard' claims of climate science. Climate science seems to offer a hammer for smashing the opposition, and environmentalists have often found it difficult to resist.

So, despite taking opposite sides on climate policy, rejectionists and their critics often share a basic assumption: climate science provides the single best justification for climate policy. They disagree on whether the science tells us about reality. But they agree that *if* science gives us an accurate picture of reality, *then* it tells us what we need to do about it. This fixation on climate science has made easy work for those who oppose climate policies. All they have to do is create public doubt about climate science. Counter-democratic attacks on climate science partly disrupt this prevailing focus on science, insofar as they highlight moral and economic disagreements. But merely by engaging their opponents on the terrain of science, rejectionists reinforce the dominant approach. In this respect, climate science rejection is better understood as a symptom, not a cause, of the failure of climate policy (Goeminne, 2012).

The sad thing is that the entire debate over climate science is largely irrelevant. For over 30 years, there has been sufficient scientific evidence of human-induced

climate change to justify 'no regrets' policies to reduce greenhouse gas emissions, promote energy research, and increase people's resilience to climate, among other things. Such policies can be justified with hybrid judgments that combine scientific and political considerations, and which remain defensible even if aspects of mainstream climate science turn out to be somewhat mistaken. Generally speaking, better climate policy does not require better climate science. Nor does it necessarily depend on better public understanding of climate science (even if that may be desirable for its own sake). Indeed, recent studies suggest that as people have come to better understand climate change, their expressed concern about it has actually decreased (Kellstedt et al., 2008). And despite the 30 percent of Americans who either reject or don't know about climate change, a recent survey found that 77 percent say global warming should be a 'very high,' 'high,' or 'medium' priority for the president and Congress. And 92 percent say that developing sources of clean energy is a 'very high,' 'high,' or 'medium' priority (Leiserowitz et al., 2012).

In other policy areas, democratic governments have adopted policies with far less scientific certainty than we have today about climate change. With regard to stratospheric ozone depletion, for example, the US Congress took steps to reduce it long before scientists had achieved consensus on the details of the science. Indeed, during the early years of research on the ozone hole, scientific uncertainties actually increased rather than decreased. But that did not deter policymakers from taking action (Pielke, 2010, pp. 25–28). With regard to climate, the economic and political stakes are much higher, and the resistance to action therefore much greater. But it is doubtful that such resistance can be overcome by harping on the science (Prins et al., 2010, p. 18).

Conclusion

The preceding discussion suggests that climate science rejection is not only an ideological tool for defending economic interests, a psychological defense mechanism, or a cowardly abandonment of reason and rationality. It may be all those things. But it is also part of a long tradition of popular distrust of power, in this case the power of science rather than government. And it is part of a tendency across the political spectrum to use science as a proxy battleground for politics. Rejectionism is not simply an unwillingness to face an 'inconvenient truth,' but a political reaction against those who would use truth to eliminate politics. In this respect, those who reject mainstream climate science may inadvertently promote a more democratic approach to climate science and policy.

It goes beyond the bounds of this chapter to outline such an approach, but it clearly depends on recasting the role of science in climate politics and policy. Scholars in the social studies of science, science communication, and related fields have developed many promising proposals, and climate policy advocates should pay more attention to their findings. Climate science is essential for understanding and responding to our changing climate, but it cannot determine which policies best represent the needs and values of diverse human communities around the

globe. Those needs and values are often matters of dispute, and effective and legitimate responses to climate change depend on various modes of citizen participation and representation, facilitated by diverse institutions at the local, national, and global level (Brown, 2009).

If democracy becomes reduced to a populist democracy of rejection, then those who argue that climate change requires us to put democracy on hold may turn out to be right. We may reach a point where authoritarian governments are better able than democracies to promote greenhouse gas reduction, climate adaptation, and some aspects of social justice. But rather than simply denouncing climate science rejection, environmental advocates should take up the concerns it raises about the politics of science. More generally, we should be aware that climate change has implications, not only for global justice and the global environment, but also for democracy – not just whether it exists, but what it means.

Note

1 "Democrats are more likely to believe that human beings evolved from earlier species of animals (62 percent), compared to Independents (57 percent), Republicans (51 percent), and Tea Party members (34 percent)" (Leiserowitz et al., 2011, p. 6).

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