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Anti-reflexivity

The American Conservative Movement's Success in Undermining Climate Science and Policy

Aaron M. McCright and Riley E. Dunlap

Abstract

The American conservative movement is a force of anti-reflexivity insofar as it attacks two key elements of reflexive modernization: the environmental movement and environmental impact science. Learning from its mistakes in overtly attacking environmental regulations in the early 1980s, this counter-movement has subsequently exercised a more subtle form of power characterized by non-decision-making. We examine the conservative movement's efforts to undermine climate science and policy in the USA over the last two decades by using this second dimension of power. The conservative movement has employed four non-decision-making techniques to challenge the legitimacy of climate science and prevent progress in policy-making. We argue that reflexive modernization scholars should focus more attention on similar forces of anti-reflexivity that continue to shape the overall direction of our social, political and economic order, and the life chances of many citizens. Indeed, better understanding of the forces and effectiveness of anti-reflexivity may very well be crucial for societal resilience and adaptation, especially in the face of global environmental problems like climate change.

Key words

climate change ■ conservative movement ■ power ■ reflexive modernization
■ reflexivity

■ *Theory, Culture & Society* 2010 (SAGE, Los Angeles, London, New Delhi, and Singapore), Vol. 27(2–3): 100–133
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ALLEGATIONS OF the George W. Bush administration's misuse and abuse of science have been offered, often with considerable support-ing documentation, by journalists (Mooney, 2005; Shulman, 2006), scientists (Bowen, 2008), science advocacy organizations (Union of Concerned Scientists, 2004a, 2004b, 2008a, 2008b), civil rights advocacy organizations (Simoncelli and Stanley, 2005), government whistleblowers (Piltz, 2007) and policy-makers (US House of Representatives, 2003, 2005, 2007). Further, essays by the editors of such prestigious peer-reviewed journals as *Science* (e.g. Kennedy, 2003), *Nature* (e.g. *Nature* Editorial Board, 2006) and the *New England Journal of Medicine* (e.g. Drazen et al., 2004) have raised major concerns about the effects of these alleged offenses on the integrity of science and the efficacy of science advising for policy-makers.

These publications paint a picture of the Bush administration as having engaged consistently in a wide range of practices – censoring, suppressing and even dismissing federal scientists; altering, distorting and suppressing scientific findings for government reports; manipulating the government's science advisory system; and ignoring, distorting and selectively using scientific evidence in policy-making – all of which can be summarized as 'abusing' science. As shown in Table 1, the titles of recent works in this area levy their charges quite bluntly and illustrate many of the above themes. The sum total suggests a level of politicization of science reminiscent of the Soviet Union's Lysenko era. Contributions to this literature rely upon numerous case studies, journalistic interviews, and occasionally large surveys of scientists in order to document *what* has occurred under the Bush administration. Sometimes they also clearly discuss *how* it has happened, but only rarely do they delve deeply into *why* it has happened – beyond suggesting the obvious political motivations of the actors involved.

Our purpose is to employ sociological insights to help explain *how* and *why* the American conservative movement (and its institutionalization with the George W. Bush administration) has vigorously attacked certain types of science at the turn of the 21st century. More specifically, we draw upon leading conceptualizations of reflexivity and reflexive modernization, Allan Schnaiberg's (1980) distinction between production science and impact science, and conceptualizations of power offered by Peter Bachrach and Morton Baratz (1970), Harvey Molotch (1970) and Steven Lukes (1974).

We argue that the American conservative movement is a force of 'anti-reflexivity' attempting to protect the industrial capitalist order of simple modernization in two senses. First, this countermovement has emerged to challenge the gains won by progressive social movements, particularly the environmental movement – a key vector of reflexive modernization. Second, the conservative movement has mobilized to challenge the legitimacy of 'impact science', another key force of reflexive modernization. Indeed, challenging the legitimacy of impact science has been a vital strategy by which the conservative movement has tried to undercut the environmental movement (Jacques et al., 2008).

Table 1 Selected reports and books criticizing the George W. Bush administration's activities regarding science and environmental protection

Reports of non-governmental organizations

- Union of Concerned Scientists. March 2004. *Scientific Integrity in Policymaking: An Investigation into the Bush Administration's Misuse of Science*.
- Union of Concerned Scientists. July 2004. *Scientific Integrity in Policy Making: Further Investigation of the Bush Administration's Misuse of Science*.
- American Civil Liberties Union. 2005. *Science Under Siege: The Bush Administration's Assault on Academic Freedom and Scientific Inquiry*.
- Union of Concerned Scientists and Government Accountability Project. February 2007. *Atmosphere of Pressure: Political Interference in Federal Climate Science*.
- Center for Biological Diversity. 2007. *Politicizing Extinction: The Bush Administration's Dangerous Approach to Endangered Wildlife*.
- Government Accountability Project. March 2007. *Redacting the Science of Climate Change: An Investigative and Synthesis Report*.
- Union of Concerned Scientists. February 2008. *Federal Science and the Public Good: Securing the Integrity of Science in Policy Making*.
- Union of Concerned Scientists. April 2008. *Interference at the EPA: Science and Politics in the U.S. Environmental Protection Agency*.

Reports of Congressional committees and government agencies

- United States House of Representatives. 2003. *Politics and Science in the Bush Administration*. Committee on Government Reform – Minority Staff. Special Investigations Division.
- United States House of Representatives. 2005. *The Administration's Assault on Climate Change Science*. Committee on Government Reform – Minority Staff.
- United States House of Representatives. 2007. *Political Interference with Climate Change Science Under the Bush Administration*. Committee on Oversight and Government Reform.
- National Aeronautics and Space Administration. 2008. *Investigative Summary Regarding Allegations that NASA Suppressed Climate Change Science and Denied Media Access to Dr. James E. Hansen, a NASA Scientist*. Office of the Inspector General.

Trade books

- Devine. 2004. *Bush Versus the Environment*.
- Kennedy. 2004. *Crimes Against Nature: How George W. Bush and His Corporate Pals are Plundering the Country and Hijacking Our Democracy*.
- Pope and Rauber. 2004. *Strategic Ignorance: Why the Bush Administration is Recklessly Destroying a Century of Environmental Progress*.
- Lord. 2005. *Dubya: The Toxic Texan – George W. Bush and Environmental Degradation*.
- Mooney. 2005. *The Republican War on Science*.
- Orr. 2005. *The Last Refuge: Patriotism, Politics, and the Environment in an Age of Terror*.
- Shulman. 2006. *Undermining Science: Suppression and Distortion in the Bush Administration*.
- Bowen. 2008. *Censoring Science: Inside the Political Attack on Dr. James Hansen and the Truth of Global Warming*.
-

To do this, the American conservative movement has exercised a subtle form of power characterized by non-decision-making and agenda-setting – what Lukes (1974), following Bachrach and Baratz (1970) and Molotch (1970), referred to as the second dimension of power. We demonstrate this by focusing on the conservative movement's challenge to climate science and policy. We find that this movement has utilized four non-decision-making techniques to prevent the US government from making substantial progress on climate policy. Our article extends recent scholarship on the political dynamics of climate change (Lahsen, 2005, 2008; McCright, 2007; McCright and Dunlap, 2000, 2003; Oreskes et al., 2008).

Forces of Reflexivity and Anti-reflexivity

Much has been published in recent years on the concept of 'reflexivity' and theories of 'reflexive modernization' (RM hereafter). Our task is not to offer a critical analysis of conceptualizations of reflexivity or an exegesis of RM theories.¹ Rather, we use general insights from two major, albeit different, RM frameworks – Risk Society Theory (RST) (e.g. Beck, 1992) and Ecological Modernization Theory (EMT) (e.g. Mol and Spaargaren, 2000) – to gain theoretical purchase for explaining why and how the American conservative movement has mobilized to challenge climate science and policy. However divergent these two outlooks, both generally agree on the critical forces driving RM.²

RM is a distinct phase of society, where the modern itself is modernized. Contingency and uncertainty loom, and institutions suffer from legitimacy crises brought on by their inability to solve the ecological and technological problems of modernization effectively. RM scholars argue that a heightened level of reflexivity is a necessary precondition for getting past our current ecological and technological crises. In this sense, they define reflexivity as a form of critical self-evaluation – a self-confrontation with the unintended and unanticipated consequences of modernity's industrial capitalist order. RM scholars identify two prominent forces of reflexivity that concern us here: impact science and social movements (Beck, 1992; Mol, 2000).

Corresponding to their distinction between primary modernization (the modernization of tradition) and reflexive modernization, RM scholars also identify a crucial shift in the institution of science. In the first phase, conceptualized as primary scientification (according to RST scholars) or 'science as part of the problem' (according to EMT scholars), scientists – largely in the physical and engineering sciences – worked within the industrial capitalist order to invent and innovate products and technologies. As a result, scientists were implicated in the creation of many chemical, technological and ecological risks in our society. In other words, through their participation in industrial capitalist organizations, scientists contributed to many major problems we now face. In the second phase, reflexive scientification (according to RST scholars) or 'science as part of the solution'

(according to EMT scholars), new fields such as environmental science, technology assessment and conservation biology emerge that identify, examine and attempt to ameliorate the negative effects of earlier scientific endeavors (Beck, 1992; Mol and Spaargaren, 2000).

Three decades ago sociologist Allan Schnaiberg (1980) offered a similar distinction between two types of science: ‘technological-production’ science and ‘environmental-social impact’ science. Especially after the Second World War, the dominant mode of science was oriented toward providing knowledge that generated innovative technologies that increased industrial capitalist production. This science in the service of production, or ‘production science’, has expanded the hegemony of economic producers by giving them more control over resources (environment) and people (workers and consumers). However, the decades after the Second World War saw the gradual rise of other areas of science more oriented toward identifying the negative impacts of science and technology (as discussed in Rachel Carson’s *Silent Spring*). This ‘impact science’ challenged the assumption that production science inevitably led to advancement and progress for society.

Writing in the late 1970s, Schnaiberg (1980) identified the numerous ways that production science dominated impact science, with the eventual result that ongoing negative effects of high-technology production were systematically ignored or downplayed. In recent decades, the impact sciences have become increasingly institutionalized, especially in academia and government agencies. Various strands of environmental science, in particular, have moved from ‘frontier’ to ‘core’ scientific standing (Dunlap and Catton, 1994), producing knowledge used by environmental policy-makers, organizations and activists.

Social movements comprise a second major force of reflexivity within the era of RM. Social movements – especially environmental movements – help raise public consciousness of unintended and unanticipated effects of the industrial capitalist social order, while providing a vision of the social transformations needed to address them. EMT scholars are quick to point out that mainstream environmental movements are crucial to the process of ecological transformation as they are the major carriers of heightened concern for ecological crises (Mol, 2000). RST scholars further assert that social movements play a central role in RM, through spreading awareness of low-probability, high-consequence risks and by bringing together disparate individuals via seemingly ad hoc participation in public events to challenge these risks (Beck, 1997). Thus, both EMT and RST scholars view social movements as crucial for helping the public and policy-makers confront the negative effects of industrial capitalism.

During times of fundamental societal change, some sectors of society – for ideological and/or material reasons – mobilize to challenge the shift. While RM scholars (Beck, 1997; Mol, 2000) do acknowledge that forces of anti-reflexivity mobilize to defend the industrial capitalist social order against the open-ended transformations of RM, they downplay their impact.

We argue that the American conservative movement is a highly potent force of anti-reflexivity.

In the 1970s, the American conservative movement mobilized economically (as an ideological foot soldier of corporate America championing reduced regulations and tax burdens), politically (promoting private property rights and challenging welfare state social services) and culturally (decrying the secularization of America, the alleged demise of the nuclear family and threats to the industrial capitalist order more broadly) as noted by numerous scholars (e.g. Diamond, 1995; Himmelstein, 1990; Stefancic and Delgado, 1996). Heavily funded by conservative families, their foundations and corporations, the American conservative movement (a network of conservative foundations, think-tanks, media outlets and public intellectuals) first gained national political power with the ascendancy of the Ronald Reagan administration in the early 1980s.³ This countermovement has sought to oppose RM – and to reassert the dominance of industrial capitalism from the era of simple modernization – by directly challenging progressive social movements and the use of impact science.

While Pellizoni's (1999) assessment that RM scholars typically ignore power and anti-reflexivity is generally accurate (see also Murray, 2009), both Beck (from RST) and Mol (from EMT) do acknowledge the existence of power and anti-reflexivity within RM. For instance, Beck sees RM as 'an unfinished and unfinishable dialectic of modernization and counter-modernization' (1997: 35), whereby he defines counter-modernity as a 'constructed certitude' that 'absorbs, demonizes and dismisses the questions raised and repeated by modernity' (1997: 63). In this way, forces of counter-modernity leverage power over forces of RM to try to reassert the industrial capitalist social order. Furthermore, Mol admits that forces of reflexivity 'will be – and in fact are in most countries – surpassed in number and influence by counter-activists: increasingly well-organized groups, coalitions and movements of anti-environmentalists' (2000: 52). Indeed, Gleeson (2000) anticipates our argument by claiming that countermovements (such as anti-environmentalism) exploit science (we would say 'impact science') and scientific uncertainty to minimize or silence the critiques of industrial capitalism promoted by environmental movements. Gleeson terms anti-environmentalism 'anti-reflexive' before arguing that 'anti-environmentalism is *now* a counter-modernizing force because it undermines the ability of modernization to adapt and sustain itself in the face of self-generated threats' (2000: 124, original emphasis).

We have thus far argued why it is reasonable to call the American conservative movement a force of anti-reflexivity. We claim that this countermovement has emerged to reassert the certitude of the industrial capitalist social order of earlier modernization, which was shattered by forces of RM. The American conservative movement challenges progressive social movements (especially the environmental movement) and the increasing use of impact science (while continuing to be supportive of production science).

Before we discuss our case study of how the American conservative movement has mobilized to challenge climate science and policy, we first describe a key form of power this countermovement has successfully employed.

The Second Dimension of Power

Steven Lukes (1974) identifies three dimensions of power in a classic text on the subject. Drawing on the works of pluralists such as Robert Dahl, Lukes (1974) argues that actors exercise the first dimension of power by protecting their subjective interests during direct conflicts over selected issues in public decision-making. Using the work of Peter Bachrach and Morton Baratz, Lukes claims that actors exercise the second dimension of power by confining the scope of decision-making to only those issues that do not seriously challenge their subjective interests. Citing the work of Matthew Crenson, Lukes argues that actors exercise the third dimension of power by preventing observable conflict from arising in the first place by shaping people's perceptions, beliefs and subjective interests via ideology and propaganda. We argue that the American conservative movement has challenged climate science and policy via an effective use of second dimension power. We focus primarily on that dimension here.

Peter Bachrach and Morton Baratz (1970) and Harvey Molotch (1970) made the initial contributions to scholarship on the second dimension of power. They focused on actual *and* potential issues, overt *and* covert conflict, and decision-making *and* non-decision-making. We summarize the main points of the second dimension of power, before turning to some recent works in this tradition.

Crucial for scholars of the second dimension of power is the idea that political systems develop a 'mobilization of bias', in that some issues are included within the system and others are excluded. Bachrach and Baratz define the mobilization of bias as 'a set of predominant values, beliefs, rituals, and institutional procedures ("rules of the game") that operate systematically and consistently to the benefit of certain persons and groups at the expense of others' (1970: 43–4). The primary method for sustaining a given mobilization of bias is 'non-decision-making', whereby a 'non-decision' is 'a decision that results in suppression or thwarting of a latent or manifest challenge to the values or interests of the decision-maker' (1970: 44). Thus, the essence of the second dimension of power is that actors prevent a decision that may directly challenge their interests by agenda-setting or creating a non-decision.

Since the early 1970s, many analysts have contributed to scholarship on the second dimension of power, particularly as it relates to environmental problems or technological controversies (see McCright and Dunlap, 2003: 351–2). These scholars highlight such processes as consciousness-lowering activities (Schnaiberg, 1994), manufacturing uncertainty (Michaels, 2006), diversionary reframing (Freudenburg and Gramling, 1994), scientific certainty argumentation methods (Freudenburg et al., 2008), environmental

skepticism (Jacques, 2006; Jacques et al., 2008) and the social construction of non-problematicity (Freudenburg, 2000; McCright and Dunlap, 2003). Our case study draws upon and extends these earlier analyses.

We argue that the American conservative movement has mobilized against the environmental movement largely by attacking the impact science upon which the environmental movement's claims and resulting environmental policy proposals are based. After discussing the conservative movement's general 'environmental skepticism' (Jacques, 2006; Jacques et al., 2008), we detail how this countermovement has employed key non-decision-making techniques associated with the second dimension of power to challenge American climate science and policy.

The American Conservative Movement's Environmental Skepticism

In the late 1960s and early 1970s, the environmental community (environmental movement actors, sympathetic scientists and environmental policy-makers) helped create our nation's current environmental policy infrastructure. While many key actors were liberals or centrists, some notable ones (e.g. President Nixon) were right of center. Yet, with time, an ideological and partisan divide has emerged in the United States over environmental protection and environmentalism. Self-identified conservatives and Republicans have become increasingly less supportive of environmental protection compared to their liberal and Democratic counterparts, and this divide has been more notable among elites, such as members of Congress, than among the general public (Dunlap et al., 2001). This partisan/ideological gap has become especially pronounced in the last 15 years, creating a chasm among Congressional members. American conservatives typically strongly defend a modernist worldview about humans and nature that some have called the Dominant Social Paradigm (Dunlap and Van Liere, 1984). The Dominant Social Paradigm includes core elements of conservative ideology, but also faith in science and technology, support for economic growth, and faith in material abundance and future prosperity, and is thus a vital element of the mobilization of bias used to defend the capitalist system.

The modern American conservative movement demonstrated its anti-environmental orientation in the late 1970s by supporting the Sagebrush Rebellion aimed at opening federal lands to private use in the American West (Switzer, 1997). In the early 1980s, conservative movement activists in the first Ronald Reagan administration (including some with Sagebrush experience) attempted to repeal environmental regulations and reduce the enforcement capability of the Environmental Protection Agency (EPA) and the Department of the Interior. However, this action generated significant Congressional resistance and public opposition, reflected both in an increase in public support for environmental protection and a huge rise in memberships of environmental groups like the Sierra Club (Dunlap, 1991). Indeed, both Secretary of the Interior James Watt and EPA Director Anne Gorsuch were forced to resign (Switzer, 1997).

Conservative activists learned it was unwise to attack environmental protection directly (exercising the first dimension of power), as Americans are in fact supportive of environmental protection and see it as a governmental responsibility. By the mid-1990s the conservative movement changed tactics and began to challenge the seriousness of environmental problems, not only by attacking the ideas and actions of environmentalists but also, and more importantly, the impact science providing the basis for environmentalists' claims. Thus, conservative movement actors learned to be more subtle and use the second dimension of power to prevent major decisions on environmental policy-making that might threaten their conservative interests. Conservatives go to great lengths to mask their efforts to weaken environmental protection by attacking the scientific evidence concerning environmental problems, (mis)labeling their initiatives with terms like 'Clear Skies' and 'Healthy Forests', and in general following conservative Republican pollster Frank Luntz's advice to portray themselves as environmentally friendly (Pope and Rauber, 2004).

A catalyst for this recent wave of the conservative movement's anti-environmentalism was the 1992 Rio Summit, which thrust global environmental problems on to the world stage and the US national agenda (Jacques, 2006). With the fall of the USSR and the emergence of global environmental problems (and global environmentalism), the US conservative movement substituted the 'green scare' for the disappearing red one (Jacques et al., 2008). Defeating global environmentalism necessitated an aggressive attack on the impact science underlying evidence for global environmental problems (e.g. ozone depletion, biodiversity loss, climate change). A heightened level of anti-environmentalism emerged in new and existing conservative think-tanks, heavily funded by conservative foundations and corporations (Austin, 2002; McCright and Dunlap, 2000, 2003). More so than local environmental problems, global environmental problems call into question the Dominant Social Paradigm (Dunlap and Van Liere, 1984) strongly defended by the conservative movement. Jacques and colleagues (Jacques, 2006; Jacques et al., 2008) term this iteration of anti-environmentalism within the conservative movement 'environmental skepticism', while Gleeson (2000) refers to it as a force of anti-reflexivity because it opposes forces of RM and protects the industrial capitalist social order.

Since Rio, the conservative movement's anti-environmentalism has visibly manifested itself in institutional politics twice: in the years following the 1994 election that gave Republicans control of both houses of Congress (e.g. Brown, 1997; McCright and Dunlap, 2000, 2003) and then with the ascendance of the George W. Bush administration. In the mid to late 1990s, the Newt Gingrich-led 'Republican Revolution' attempted to repeal existing environmental legislation, underfund the environmental science programs at government agencies, and generally cripple the functioning of environmental regulatory agencies (Brown, 1997). One key success was the 1995 closure of the Office of Technology Assessment (OTA),

which was previously Congress's only source for independent scientific advice. Conservatives perceived OTA as a source of impact science and quickly eliminated it (Mooney, 2005). The conservative movement also began using the terms 'sound science' and 'junk science' as political tropes during this time period, after the 1993 creation of The Advancement of Sound Science Coalition (TASSC) by conservative movement activist Steven Milloy, regularly applying the latter term to impact science suggesting the need for governmental regulations (Herrick and Jamieson, 2001). The institutionalization of the American conservative movement in the executive branch with the 2000 election of George W. Bush as President gave this countermovement vastly more leverage to challenge environmental science and policy from *within* the state structure than it had ever enjoyed before.

The Conservative Movement's Attack on Climate Science and Policy

We turn to an analysis of the activities of conservative movement activists outside of institutional political channels (e.g. those in conservative think-tanks) and those of the institutionalized manifestations of this countermovement in the mid-1990s Republican Congress and the George W. Bush administration. Since the activities of these actors vis-a-vis climate change are quite numerous, we merely discuss a few examples as illustrative of key non-decision-making techniques associated with the second dimension of power. Our main objective here is to demonstrate *how* the American conservative movement has attacked climate science and policy in recent years. Let us first explain our focus on the American conservative movement rather than a more materialist emphasis on corporations, as advocated by Fisher (2006). Briefly, we examine this countermovement because of the constancy of its anti-environmental position over the past two decades, even as many corporations have 'greened' their position, and because of its role in supplying ideas for American policy-making circles.

Corporations in many industries are now employing 'green' discourse out of financial interest, while conservative movement activists rail against environmentalism. Nowhere is this more evident than on the issue of climate change. The December 1997 Kyoto Conference was a watershed for the business community by several accounts (e.g. Layzer, 2007; Newell, 2000). After Kyoto, most oil companies gradually acknowledged publicly the reality of global warming and abandoned the anti-environmental Global Climate Coalition, while joining groups – such as the Business Environmental Leadership Council – that acknowledge the necessity of decreasing greenhouse gas emissions. Regardless of motives, much of the business community – with the obvious exception of ExxonMobil (Union of Concerned Scientists [UCS], 2007) – no longer sees challenging the *science* of climate change to be a productive strategy. Indeed, Levy and colleagues (Kolk and Levy, 2001; Levy and Egan, 2003) and Newell (2000) found that by 2000 most multinational fossil fuel corporations ceased using the tactics to undermine climate science and policy that the American conservative movement

continues to employ to date, provoking the anger of ideological conservatives (Layzer, 2007).⁴ Yet, the conservative movement continues to challenge climate science and policy as part of its long-term opposition to the environmental movement and impact science.

We are also persuaded by existing works discussing the critical role that ideas play in policy-making – and the power of those actors who provide such ideas. Campbell (1998) and Yee (1996) talk about the importance of ideas in public policy-making (independent of the economic materialism of corporate power), and many scholars (e.g. Campbell, 1998; Fischer, 1991; Stefancic and Delgado, 1996) have demonstrated the critical influence that conservative think-tanks have had on public policy-making in the US. Paralleling our assertion that the American conservative movement has exercised the second dimension of power, Fischer (1991: 345, original emphasis) writes the following about conservative think-tanks:

Missing, then, from the pluralist explanation [the first dimension of power] is the critically important fact that the agenda for policy consideration is increasingly shaped and approved by private elites *before* governmental policymakers and political parties become actively involved in the process.

Also critical here is the *mea culpa* of current conservative movement activist (and former climate change skeptic) Ronald Bailey of the conservative think-tanks Reason and Competitive Enterprise Institute. Bailey (2006) flatly acknowledges that his long-term opposition to climate science and policy had been influenced more by his ideology than by financial support from industry. In other words, Bailey's ideological opposition came first, and financial support followed. This emphasis on ideas and ideology comes through even more strongly in Lahsen's (2008) analysis of three leading climate change skeptics from the Marshall Institute (also see Oreskes et al., 2008). Lahsen finds that the three influential founders of the Marshall Institute – Frederick Seitz, Robert Jastrow and William Nierenberg – lent their expertise to this conservative think-tank primarily to oppose what they believed was a trend toward the increasing importance of impact science at the expense of production science. They personify the American conservative movement's challenge to environmentalism and impact science:

Their discourses generally reveal a pre-reflexive modernist ethos characterized by strong trust in science and technology as providers of solutions to problems, whether environmental, social, or economic, an understanding of science and progress that prevailed during the first half of the 20th century. (Lahsen, 2008: 211)

In short, their ideology leads them to reject impact science in a reactionary attempt to reassert the industrial capitalist order of simple modernity – when their area of physics enjoyed greater public funding and social prestige.

Furthermore, comparative US-Canadian and US-German analyses of climate politics and policy also point to the pivotal role of ideas from climate

change skeptics and their conservative think-tank sponsors in helping account for the recalcitrant position of the US (Grundmann, 2007; Harrison, 2007). Such evidence suggests that conservative movement opposition to climate science and policy has a firm ideological base that supersedes the obvious desire for corporate funding. For these reasons, we chose to examine how the conservative movement has challenged climate science and policy as an example of this countermovement's more general attempts to attack environmentalism and impact science in order to defend the industrial capitalist order of simple modernity.

The American conservative movement has employed four non-decision-making techniques associated with the second dimension of power to make climate change a non-issue and prevent significant progress on climate policy-making. This countermovement has (1) obfuscated, misrepresented, manipulated and suppressed the results of scientific research; (2) intimidated or threatened to sanction individual scientists; (3) invoked existing rules or created new procedures in the political system; and (4) invoked an existing bias of the media. We briefly discuss and provide empirical examples illustrating each technique from the past two decades. Table 2 summarizes these four techniques and examples of each.

Obfuscating, Misrepresenting, Manipulating and Suppressing Research Results

Activists in the American conservative movement have obfuscated, misrepresented, manipulated and suppressed the results of climate science research (see Molotch, 1970). Conservative activists have obfuscated such results by promoting both peer-reviewed and non-peer-reviewed publications by a handful of contrarian scientists, who regularly speak out against the mainstream scientific consensus. Indeed, their publications form a significant proportion of conservative think-tank documents challenging the reality of global warming that were disseminated by a network of conservative think-tanks during the 1990s (McCright and Dunlap, 2000, 2003).

McCright and Dunlap (2000) analyzed 224 publications disseminated by 14 conservative think-tanks between 1990 and 1997 (when the Kyoto Conference occurred) and identified three key counter-claims that conservative think-tanks promoted to challenge climate science and policy. First, conservative think-tanks claimed that the evidentiary basis of global warming is weak, if not wrong. They did this by relying upon contrarians' publications that highlighted the uncertainty of the evidence for global warming, called mainstream climate research 'junk science' and occasionally accused the International Panel on Climate Change (IPCC) of intentionally altering its reports to 'manufacture' its position. Second, conservative think-tanks argued that the net effect of global warming would be beneficial to our quality of life, health and agriculture should it occur, by touting the purported benefits of warmer weather while demonstrating a complete lack of comprehension of the socio-ecological ramifications of climate change. Third, conservatives argued that the policies proposed to

Table 2 Key non-decision-making techniques employed by the conservative movement to challenge climate science and policy

<i>Non-decision-making technique</i>	<i>Illustrative empirical cases</i>
<i>Obfuscating, misrepresenting, manipulating or suppressing the results of scientific research</i> (Molotich, 1970: 133–4, 137–8, 140)	
1. Obscured the results of scientific research by	
A. Selectively promoted existing publications by contrarian scientists with positions at odds with the scientific consensus	Conservative think-tanks relied upon a handful of cherry-picked studies by contrarian scientists while ignoring the scientific consensus during the 1990s and early 2000s (McCright and Dunlap, 2000, 2003) White House removed mention of 2001 National Academy of Sciences climate change report from the EPA's draft report on the environment in favor of a largely discredited single publication by two climate change skeptics (Mooney, 2005; Shulman, 2006; UCS, 2008b)
B. Funded contrarian scientists to produce new reports that are often not peer-reviewed	Conservative think-tanks enlisted the services of well-known climate change skeptics as authors or expert sources for a few hundred policy briefs, position statements, op-ed essays, and press releases in the 1990s (Austin and Phoenix, 2005; Jacques et al., 2003; Lahsen, 2005; McCright and Dunlap, 2003b)
2. Misrepresented the results of scientific research by spinning the results or committing errors of omission	Mischaracterized the 2001 National Academy of Sciences climate change report (Austin and Phoenix, 2005; McCright and Dunlap, 2003; Mooney, 2005) Disparaged the 2002 US <i>Climate Action Report</i> (UCS, 2004a, 2008b) Climate Change Science Program omitted references to the first National Assessment from a range of documents (e.g. <i>Climate Change Strategic Plan</i> and the 2002 <i>Our Changing Planet</i>) (Center for Public Integrity, 2008; Mooney, 2007)
3. Manipulated the results of scientific research by editing government agency reports prior to publication	Kept reference to first <i>National Assessment</i> and US <i>Climate Action Report</i> off the EPA website (UCS, 2008b) Lobbyist Philip Cooney edited uncertainty into government reports between 2001 and 2005 (Begley, 2007; Faris, 2008; GAP, 2007; UCS, 2007, 2008b; US House of Representatives, 2007) White House Council on Environmental Quality edited climate change out of EPA's 2002 annual air pollution report and inserted uncertainty into EPA's 2003 draft report on the environment (GAP, 2007; Simoncelli and Stanley, 2005; UCS, 2004a; US House of Representatives, 2003, 2005, 2007)

Continued

Table 2 Continued

<i>Non-decision-making technique</i>	<i>Illustrative empirical cases</i>
4. Suppressed (by stalling or canceling) scientific reports from government agencies	EPA refused to release analysis of Senator Carper's air pollution regulation bill (US House of Representatives, 2003, 2005) EPA refused to analyze McCain-Lieberman Climate Stewardship Act (US House of Representatives, 2003, 2005) Blocked a NOAA report on climate change and hurricanes (GAP, 2007; Mooney, 2007) Delayed release of the second <i>National Assessment</i> (Center for Public Integrity, 2003; GAP, 2007; Mooney, 2007)
	<i>Intimidating or threatening sanctions on individual scientists</i> (Molotch, 1970: 133–4, 137–8, 140)
1. Attacked individual scientists who work at public or private universities to discredit their work	Accused mainstream climate scientists of being 'junk scientists' (McCright and Dunlap, 2000, 2003) Personal attacks on specific mainstream climate scientists in mid-1990s and mid-2000s (Brown, 1997; McCright and Dunlap, 2003; UCS, 2007)
2. Silenced, censored or otherwise targeted individual scientists who work at government agencies by influencing what they can say and to whom they can say it	Censored federal scientists in several agencies (Bowen, 2008; NASA, 2008; UCS, 2008a, 2008b; US House of Representatives, 2005, 2007) Many EPA scientists reported widespread and inappropriate interference in their scientific work (UCS, 2008b) Many federal climate scientists reported widespread and inappropriate interference in their scientific work (UCS and GAP, 2007)
	<i>Involving existing (or creating new) rules or procedures in the political system</i> (Bachrach and Baratz, 1970: 43–4; Lukes, 1974: 17–20)
1. Held seemingly open-ended investigatory hearings where results were pre-determined	Dana Rohrabacher (R-CA) conducted the 'Scientific Integrity and Public Trust' hearings in fall 1995 to discredit mainstream climate science and promote climate change skeptics (Brown, 1997; McCright and Dunlap, 2003) Joe Barton (R-TX) conducted a hearing in 2006 to attack mainstream climate scientists (UCS, 2007) James Inhofe (R-OK) conducted a hearing in 2003 to promote climate change skeptics (Layzer, 2007; UCS, 2007)
2. Changed the scientific rules that government agencies must follow	Created the Data Quality Act that gives opponents of environmental regulation greater power to challenge information disseminated by federal agencies (Herrick, 2004; Mooney, 2005; Simoncelli and Stanley, 2005; UCS, 2004a, 2007, 2008a, 2008b; US House of Representatives, 2003) Office of Management and Budget attempted to centralize scientific peer review applicable to all federal agencies (UCS, 2008b; Simoncelli and Stanley, 2005)
	<i>Invoking an existing bias of the media</i> (Molotch, 1970: 140)
1. Exploited the mass media's 'balancing norm' to promote fringe scientists' views to near parity with mainstream scientific consensus	Conservative think-tanks promoted the positions and activities of climate change skeptics to increase their media exposure, contributing to the public perception of scientific controversy over climate change (Boykoff and Boykoff, 2004; Dispensa and Brulle, 2003; McCright and Dunlap, 2003)

ameliorate global warming would do more harm than good. Publications containing this counter-claim identified certain harm to our national economy, national security, national sovereignty and even our natural environment as prime costs of any international climate treaty. Briefly, then, conservative think-tanks asserted that while the science of global warming is becoming more *uncertain*, the harmful effects of climate change policy are becoming more *certain*.

Since Kyoto, conservative activists have employed several new claims to counter the IPCC and proponents of climate policy-making, particularly the ‘conservative equity’ claim that it is ‘unfair’ for the US to limit CO₂ emissions if developing nations such as China and India do not do so as well (an argument frequently used by the Bush administration). Although we have not conducted a recent analysis of conservative think-tank websites as we did for the period 1990–7, it is clear that additional counter-claims have evolved in response to increasingly credible evidence of anthropogenic climate change produced by the IPCC. While reluctantly acknowledging that global warming may be occurring, conservatives have argued that it is a natural phenomenon, that human activities are a modest cause of warming, that there is nothing that can be done to halt warming, that rich nations such as the US can easily adapt to warmer weather and so forth – gradually giving ground to the reality of global warming but consistently arguing that there is no need to try to reduce carbon emissions, nor any use in doing so. And, of course, outright denials of the reality of climate change, invoking one or more disproven alternative explanations, continue to appear on conservative websites, blogs and electronic media.

To justify its inaction on climate change, the George W. Bush administration consistently employed the tactic of selectively promoting fringe science at odds with the international scientific consensus. The most obvious example of this occurred in spring 2003. Philip Cooney, chief of staff for the White House Council on Environmental Quality (CEQ) from 2001 to 2005, made numerous edits to the EPA’s draft version of its ‘State of the Environment’ report. Critical here is that Cooney edited out all references to a 2001 National Academy of Sciences (NAS) report on the state of climate science knowledge (National Research Council [NRC], 2001) – that the Bush White House itself had requested – and inserted references to a discredited publication (Soon and Baliunas, 2003) authored by two well-known climate change skeptics (Mooney, 2005; UCS, 2008b). EPA staff scientists noted that Cooney’s revisions contradicted the mainstream scientific consensus, thus prompting the EPA simply to remove the entire section of climate change from its eventual report rather than violate its scientific integrity (UCS, 2008b).

A second way that conservative movement activists have obfuscated the results of climate science is by directly supporting climate change skeptics to promote their counter-claims challenging climate science and policy (Jacques, 2008; Lahsen, 2005, 2008; McCright and Dunlap, 2003). Central here are the affiliations between influential conservative think-tanks

and contrarian scientists. McCright and Dunlap (2003) found that most of the well-known climate change skeptics were affiliated with and presumably on the payroll of at least one conservative think-tank as a fellow, visiting scholar or consultant. These contrarian scientists lent their expertise to these organizations by authoring documents widely disseminated by them, appearing at their sponsored press conferences and testifying on their behalf in Congressional hearings (McCright and Dunlap, 2003). Conservative think-tanks provided the skeptics with substantial resources and significant venues for promoting their ideas, and the skeptics provided the conservative think-tanks with an appearance of scientific legitimacy with which these countermovement organizations could attack mainstream climate science.

Besides obfuscating the results of scientific research by promoting contrarian science and scientists, conservative activists have also misrepresented existing scientific reports by spinning their results and committing errors of omission (Kennedy, 2004; McCright and Dunlap, 2003; Mooney, 2005; UCS, 2004a, 2008b; US House of Representatives, 2003, 2007). The Bush White House mischaracterized the very 2001 NAS climate science report (which supported the results of the IPCC's *Third Assessment Report* that anthropogenic climate change is already occurring) that it had requested. While the White House asked the NAS to report the state of climate science knowledge (what we know and what we do not know), subsequent discussion of this report by Bush administration officials focused almost solely on the report's coverage of gaps and uncertainty. Clearly, the Bush administration misrepresented the degree of scientific uncertainty in this report (Austin and Phoenix, 2005; McCright and Dunlap, 2003). In a March 2001 speech justifying why the US would not be party to the Kyoto Protocol, President Bush (2001) challenged the scientific consensus – which the NAS report had validated and clearly described – by saying that the report:

... tells us that we do not know how much effect natural fluctuations in climate may have had on warming. We do not know how much our climate could, or will change in the future. We do not know how fast change will occur, or even how some of our actions could impact it.

Two subsequent documents (US White House, 2002a, 2002b) by Bush's cabinet-level climate change working group – the Climate Change Science Program (CCSP), formerly the Climate Change Research Initiative – exhibited a conspicuous and detailed emphasis on the uncertainties of climate science. For instance, *Climate Change Review* (US White House, 2002a: 1), which reported the initial findings of the CCSP, claimed to be a report that 'outlines areas supported by the science and significant gaps in our knowledge of climate change'. However, even a casual reader could realize this report ignored all the 'core' knowledge claims about global warming, *only* discussed gaps and uncertainties in climate science, and

even mischaracterized the 2001 NAS report: ‘At the most fundamental level, the report indicated the need to better understand the causes of warming’ (United States White House, 2002a: 23).

When conservative movement activists could not directly control the scientific reports created *within* agencies of the Bush administration, they resorted to disparaging these reports or omitting official reference to them altogether. For instance, the EPA produced its 2002 *Climate Action Report* to fulfill our country’s obligations to the United Nations Framework Convention on Climate Change. Even though it was highly edited by CEQ chief of staff Cooney, this report still declared that anthropogenic global warming was already occurring. Under advice from the Competitive Enterprise Institute’s Myron Ebell, Bush administration officials immediately disparaged the document (Government Accountability Project [GAP], 2007; UCS, 2004b, 2008b). Indeed, on the day after its publication, President Bush dismissed it as ‘a report put out by the bureaucracy’ (Seelye, 2002).

Conservative activists within the Bush administration also omitted reference to inconvenient reports of the mainstream scientific consensus. The document most often ignored by countermovement activists is the Clinton-era *National Assessment of the Potential Consequences of Climate Variability and Change* (2000; hereafter *National Assessment*), probably the most comprehensive federal government climate science publication yet produced. Bush’s CCSP and the White House CEQ routinely removed nearly all reference to the 2000 *National Assessment* from their official documents (Center for Public Integrity, 2008; GAP, 2007; Mooney, 2007; US House of Representatives, 2007). Events in 2003 surrounding the preparation of the CCSP’s legally required Strategic Plan are particularly telling, as reported in a court declaration by whistleblower Rick S. Piltz – a former senior associate of the CCSP:

In the March 31, 2003 draft, there were a total of 12 references to the National Assessment. In the June 2, 2003 draft, 4 of these references had been removed. . . . In the June 30, 2003, ‘Agency Concurrence Draft’, 7 references remained. In the July 24 Pre-Publication version that was released in a limited edition, 5 references remained. In the September 2003 final printed version of the plan, 4 of these 5 references had been removed. The existence of the National Assessment was mentioned only in a single sentence, which did not include the actual title of the report. (Piltz, 2007: 19)

The Bush administration’s EPA also omitted important science publications from its official website, a crucial means of communication with the general public. While EPA officials failed to update the agency’s climate change website from 2002 to 2006 (GAP, 2007; Piltz, 2006a), they finally posted a new website in October 2006. Unfortunately, the new website contained no reference to either the 2000 *National Assessment* or the *Climate Action Report* (GAP, 2007; Piltz, 2006b), further allowing the Bush administration to effectively ignore the implications of these scientific reports.

Conservative activists in the Bush administration were not content to merely misrepresent or ignore the results of existing reports. They also manipulated the results of scientific research by editing government agency reports prior to publication. While this practice by White House officials in the CCSP, CEQ and Office of Management and Budget (OMB) was rampant (Begley, 2007; Faris, 2008; GAP, 2007; Mooney, 2005; Shulman, 2006; UCS, 2007, 2008b; US House of Representatives, 2007), we only discuss two particularly illustrative cases – Philip Cooney's September 2002 edits of the EPA's annual air pollution report and his June 2003 edits of the EPA's draft version of its 'State of the Environment' report.

As mentioned earlier, Cooney was the chief of staff for the White House CEQ. Between 2001 and 2005, Cooney edited uncertainty into – and scientific consensus out of – many science reports from various government agencies, until evidence of his activities published by the *New York Times* forced his resignation (GAP, 2007; Mooney, 2005; Revkin, 2005; UCS, 2008b; US House of Representatives, 2005). This central figure is a lawyer with a degree in economics and no formal science training. Prior to his job at the White House, Cooney was a lobbyist at the American Petroleum Institute, an oil industry trade group. After his resignation from CEQ, he was hired by ExxonMobil. Philip Cooney appears to be the personification of the tactic called 'manufacturing uncertainty' that has been so successfully employed by industries fighting government regulations (Michaels, 2006).

In September 2002, Cooney and the White House CEQ effectively vetoed the entire climate change section from the EPA's annual air pollution report (GAP, 2007; UCS, 2004a; US House of Representatives, 2003, 2005, 2007). We described earlier how Cooney edited out all references to the 2001 NAS report from the EPA's draft report version of its 'State of the Environment' report and inserted references to a discredited publication authored by two well-known climate change skeptics (Mooney, 2005; UCS, 2008b). He also edited much of the draft to magnify the uncertainty regarding several areas of climate science. Indeed, an internal EPA memo (cited in UCS, 2004a: 6) stated that Cooney's edits to the draft inserted 'uncertainty . . . where there is essentially none'. Rather than suffer the indignity of publishing the edited version of the report – and misrepresenting the international scientific consensus – EPA staff chose to delete the entire section on climate change. EPA Administrator Christine Whitman resigned four days after the release of the version without the climate change section.

The final way that conservative movement activists in the Bush administration attacked the results of scientific research was by suppressing scientific reports from government agencies (Kennedy, 2004; Mooney, 2005; Simoncelli and Stanley, 2005; UCS, 2004a, 2008a, 2008b; US House of Representatives, 2003). Four examples illustrate this strategy, with the last perhaps being the most important. Early on the Bush administration's EPA refused to release a requested analysis of one piece of climate legislation and refused to conduct an analysis on another piece of similar

legislation. In July 2002, Senator Thomas Carper (D-DE) introduced emissions limits legislation – competing with Bush’s Clear Skies Act – that would set tighter limits and also include carbon dioxide. The EPA first refused to release its analysis of his bill for months, and then eventually released a very limited analysis that only examined the bill’s costs (US House of Representatives, 2003, 2005). Also, the Bush administration prevented the EPA from completing a requested analysis of the 2003 McCain–Lieberman Climate Stewardship Act, which would have established a national cap on greenhouse gas emissions (US House of Representatives, 2003, 2005).

In September 2006, Bush administration officials in the Department of Commerce blocked publication of a National Oceanographic and Atmospheric Administration (NOAA) report on the relationship between global warming and increased hurricane intensity (GAP, 2007; Mooney, 2007). Yet perhaps the most egregious example of suppression until quite recently concerns the *National Assessment* (GAP, 2007; Mooney, 2007). We stated earlier that conservative activists in the White House removed reference to the Clinton administration’s *National Assessment* from a range of official government documents and websites. We now identify how conservative activists long suppressed the legally required updated assessment.

The Global Change Research Act of 1990 requires the federal government to develop both a ‘National Global Change Research Plan’ (to be updated every three years) and a scientific assessment of the impacts of climate change (to be produced every four years). A month before the Clinton administration produced our nation’s first assessment in November 2000, conservative activists – including the Competitive Enterprise Institute (CEI), the Heartland Institute, Senator James Inhofe (R-OK), Representative Jo Ann Emerson (R-MO), among others – sued Clinton to suppress that publication, objecting to how the National Assessment Synthesis Team and the Clinton administration prepared the document (Jacques et al., 2008; Mooney, 2007). The suit was re-filed in George W. Bush’s first term, with CEI then trying to suppress the 2000 *National Assessment* on the grounds that it was created in violation of the Data Quality Act – which did not exist when the assessment was completed (Mooney, 2007). The two parties reached a settlement whereby conservative activists in the Bush administration stipulated that the *National Assessment* would not serve as the basis for any federal policies.

Administration whistleblower Rick Piltz claimed in a federal court that the White House CEQ and Philip Cooney were key figures in the suppression of any new assessment (GAP, 2007; Mooney, 2007). Eventually, members of the environmental community sued the Bush administration to comply with the 1990 Global Change Research Act and produce a new assessment. In August 2007 a federal judge issued a court order directing President Bush to comply with the law, and the Bush administration finally began delivering its assessment in May 2008. Yet, rather than complete a single, comprehensive report, the Bush administration slowly provided its assessment in a series of 21 reports – with the last five published on 16

January 2009, the administration's final working day. This tactic amounts to a 'creeping event', which Molotch (1970: 139) defined as:

... when the manifest signs of an event are arranged to occur at an inconspicuously gradual and piecemeal pace, thus eliminating some of the consequences which would otherwise follow from the event if it were to be perceived all-at-once to be occurring.

Producing the National Assessment four years late in 21 parts has served to effectively suppress policy action that would have likely occurred if policy-makers and the general public had received a comprehensive assessment on schedule.

Intimidating or Threatening Individual Scientists

Conservative movement activists have employed a second key non-decision-making technique: intimidating or threatening sanctions on individual scientists (Molotch, 1970). They did this by attacking individual university scientists and by silencing, censoring or otherwise targeting individual scientists employed in government agencies. In the 1990s, members of conservative think-tanks regularly accused mainstream climate scientists (most of whom are professors at public or private universities) of being 'junk scientists' more concerned with securing federal research funding than with the truth (McCright and Dunlap, 2000). Activists in conservative think-tanks and in Congress especially attacked accomplished climate scientists, such as Dr Benjamin Santer (an atmospheric scientist and lead author of the IPCC's *Second Assessment Report*) and Dr F. Sherwood Rowland (an atmospheric chemist and 1995 Nobel Laureate in Chemistry for research on the thinning of the ozone layer), accusing them of scientific malfeasance. Conservatives attempted to intimidate these high-profile scientists, and sully their image, with the aim of disparaging mainstream climate science more generally by association. While their tactics produced no evidence of scientific wrongdoing, their public accusations nevertheless were enough to cast doubt on climate science within Congress (Brown, 1997; McCright and Dunlap, 2003).

This tactic emerged in recent years, for instance, in Representative Joe Barton's (R-TX) attack on Drs Michael Mann, Raymond Bradley and Malcolm Hughes, authors of important peer-reviewed publications popularly known for validating the 'hockey stick' phenomenon – that global mean temperatures have recently increased after a long period of stability. Representative Barton first demanded that these scientists turn over a mass of their data and research materials for the previous 15 years – an unprecedented request, especially since most of these research materials were not related to the publications in question. Then Representative Barton engineered a Congressional hearing to intimidate these scientists, inviting members of CEI and the Marshall Institute to levy unfounded accusations against the scientists (GAP, 2007; UCS, 2007).

Conservative activists in the Bush administration have also silenced, censored or otherwise targeted individual scientists employed at government agencies (Bowen, 2008; GAP, 2007; National Aeronautics and Space Administration [NASA], 2008; Shulman, 2006; UCS, 2008a, 2008b; UCS and GAP, 2007; US House of Representatives, 2007). A striking example of Bush administration officials targeting scientists is seen in the case of Dr Robert Watson. While not technically a federal employee, Dr Watson served as the Chair of the IPCC from 1996 to 2002, overseeing the publication of its *Third Assessment Report* in 2001, which concluded there was strong evidence that anthropogenic global warming was already occurring. Under pressure from the White House CEQ, the US State Department opposed Dr Watson's reelection as IPCC Chair – a position he then lost in April 2002.

Perhaps the most famous case of censoring a government scientist in recent decades involves NASA's top climate scientist Dr James Hansen, a vocal spokesperson for climate science since the late 1980s (Bowen, 2008; NASA, 2008). NASA public affairs officials filtered Dr Hansen's public statements and media interviews to reduce his ability to make scientific claims that conflicted with the Bush administration's position on climate change (UCS, 2008a). NASA's Office of the Inspector General published an investigative report finding that:

... during the fall of 2004 through early 2006, the NASA Headquarters Office of Public Affairs managed the topic of climate change in a manner that reduced, marginalized, or mischaracterized climate change science made available to the general public through those particular media over which the Office of Public Affairs had control. (NASA, 2008: 1)

More significant than these specific cases of undermining such high-profile scientists is recent evidence of widespread censorship and political pressure felt by hundreds of government scientists across seven government agencies (UCS, 2008b; UCS and GAP, 2007). A UCS and GAP (2007) report found widespread interference in how government scientists studying climate change at such agencies as NOAA, NASA and the EPA could communicate their research findings. Also, UCS (2008b) conducted a survey of 1586 EPA scientists during summer 2007 and found that several hundred EPA scientists have personally experienced specific forms of political interference. Such experiences were detailed in GAP's (2007) report of interviews with several dozen government scientists.

Invoking Existing (or Creating) New Rules or Procedures

A third non-decision-making technique the American conservative movement has employed has been to invoke existing – or create new – rules or procedures of the political system from which it could disproportionately benefit (Bachrach and Baratz, 1970; Lukes, 1974). In general, conservative activists have benefited from the Bush administration's exceptionally strong tendency to fill agency positions with political appointees with strong

partisan credentials – facilitating the ‘agency capture’ of the Department of the Interior, the EPA and the Department of Energy. For example, George W. Bush’s Secretary of the Interior until 2007 was Gale Norton, a former attorney for the conservative Mountain States Legal Foundation established by James Watt, and co-founder – with leading conservative anti-tax activist Grover Norquist (see Medvetz, 2006) – of the Council of Republicans for Environmental Advocacy (CREA). CREA was set up to cast Republicans’ environmental policies in a positive light and combat the Republicans for Environmental Protection, a pro-environmental organization quite critical of party policy on environmental issues.

In the Bush administration, top climate scientists were *personae non grata* around the White House. Dr Rosina Bierbaum, who served in the Office of Science and Technology Policy (OSTP) during the first year of the Bush administration, claims: ‘The scientists [who] knew the most about climate change at OSTP were not allowed to participate in deliberations on the issue within the White House inner circle’ (UCS, 2004a: 7). Rather than climate scientists, the White House packed the CCSP, CEQ and Vice-President Cheney’s energy task force (the National Energy Policy Development Group) with conservative activists and industry representatives who attacked climate science and policy (Austin and Phoenix, 2005). It was common knowledge within the administration that any documents related to climate science or policy would be passed to the White House CEQ for review – and likely editing (UCS, 2004a).

We identify two specific tactics within this more general non-decision-making technique. First, conservative activists in Congress have held seemingly open-ended investigatory hearings whose results were clearly pre-determined (Brown, 1997; Layzer, 2007; McCright and Dunlap, 2003; UCS, 2007). We claim that this tactic is a type of ‘pseudo-event’, which Molotch (1970: 139) says ‘occurs when men [sic] arrange conditions to simulate a certain kind of event, such that certain prearranged consequences follow as though the actual event had taken place’. Over the years, conservative Republicans in Congress have structured hearings on climate science and climate scientists to produce what they wanted to achieve: the disparagement of both the science and scientists. Typically, conservative Republicans have composed their witness lists and structured their hearing questions so that no other outcome is possible. We identify three prominent instances.

In 1995 Representative Dana Rohrabacher (R-CA), Chair of the Subcommittee on Energy and the Environment, conducted three ‘McCarthy-esque’ hearings on alleged scientific improprieties in three major areas of environmental science: ozone depletion (US House of Representatives, 1995a), global warming (1995b) and chemical dioxins (1995c). The Republican majority expected to demonstrate that the science underlying these three issues was distorted to serve the political purposes of liberals, thereby justifying both the repeal of environmental regulatory policies created on the basis of this science and the reduction of research funding for these

areas of science. Yet, Representative George E. Brown Jr (1997: 14) reported: ‘the hearings produced no credible substantiation of any of the claims of scientific misconduct’. Nevertheless, the work of mainstream climate scientists was unduly criticized, while the non-peer-reviewed work of climate change skeptics associated with conservative think-tanks and industry organizations was touted (McCright and Dunlap, 2003: 361–2).

This tactic has been revived in recent years by Representative Joe Barton (R-TX) and Senator James Inhofe (R-OK). As noted earlier, in July 2006 Representative Barton conducted a hearing (US House of Representatives, 2006) to attack the mainstream climate scientists who have contributed to the ‘hockey stick’ temperature studies. Key witnesses included climate change skeptics affiliated with conservative think tanks and fossil fuels industry executives, providing Representative Barton enough verbiage to attack Dr Mann and colleagues and give the appearance of scientific impropriety without any substantiated evidence (UCS, 2007). Senator Inhofe convened a July 2003 hearing on the proposed Climate Stewardship Act before the Senate Environment and Public Works Committee (US Senate, 2003) simply to promote climate change skeptics and his own personal opinions on climate change. Yet he passed it off as a genuine investigatory hearing into the state of climate science. While this hearing was not as much of a spectacle as one Inhofe chaired in September 2005 (when he invited science fiction writer Michael Crichton to rail against climate science), it nevertheless became famous for Inhofe’s (2003) two-hour speech ending with the following: ‘With all of the hysteria, all of the fear, all of the phony science, could it be that man-made global warming is the greatest hoax ever perpetrated on the American people? It sure sounds like it.’

Conservative activists in the Bush administration also tried to change the scientific rules that government agencies must follow (Herrick, 2004; Mooney, 2005; Simoncelli and Stanley, 2005; UCS, 2004a, 2007, 2008a, 2008b; US House of Representatives, 2003). We provide two examples here: the Data Quality Act and OMB’s peer review rules.

In 2000, long-time conservative movement activist Jim J. Tozzi wrote a few legalistic sentences and passed them on to Representative Jo Ann Emerson (R-MO), who added them as a rider in the 712-page Consolidated Appropriations Act that was signed into law in early 2001. Thus was born the Data Quality Act, which ‘creates an unprecedented and cumbersome process by which government agencies must field complaints over the data, studies, and reports they release to the public’ (Mooney, 2005: 103). In other words, opponents of environmental regulations now have a powerful legal avenue through which to challenge the impact science disseminated by federal agencies. Indeed, we wrote earlier that the CEI has already sued the federal government over the 2000 *National Assessment*, arguing that it violated the procedures of the Data Quality Act (which was passed after the *National Assessment* was completed) (Mooney, 2007; UCS, 2007). As a UCS (2008a) study points out, while almost none of the numerous conservative movement and industry challenges on behalf of the Data Quality Act are

successful, they nevertheless succeed in forcing federal agencies such as the EPA to devote considerable resources and personnel to fight legal battles – often reducing their ability to carry out their scientific and regulatory missions.

During the Bush administration, conservative activists in the White House's OMB tried to change the rules by which government agencies produce and review scientific reports. Briefly, the rules (see OMB, 2004, 2005) gave the OMB centralized control over peer review of federal agencies' scientific reports used in policy-making, likely resulting in greater delay in the dissemination of important scientific reports (Mooney, 2005; Simoncelli and Stanley, 2005; UCS, 2008b). This gave the OMB: 'authority to designate information as requiring more or less stringent levels of peer review, issue exemptions, and establish or approve processes for selecting reviewers' (Simoncelli and Stanley, 2005: 28). Regarding the latter, scientists who received funding from a government agency (many of the leading experts in a given area) were prohibited from serving as a peer reviewer, opening up new opportunities for scientists employed by conservative think-tanks or corporations to serve as reviewers. The summer 2007 survey of EPA scientists by the UCS (2008b: 28) found that 'nearly 100 EPA scientists explicitly identified the OMB's meddling in EPA decision making as a major hindrance to the agency's scientific integrity'. While the legality of this rule remained in question, it nevertheless was a normal operating procedure in the Bush administration's OMB.

Invoking an Existing Bias of the Media

Conservative movement activists have employed a fourth key non-decision-making technique by invoking an existing bias of the media (Molotch, 1970). In short, the conservative movement has exploited the media's 'balancing norm' – or the equation of 'objectivity' with presenting 'both sides of the story' – to attack climate science and policy (McCright and Dunlap, 2003). Through the sheer weight of hundreds of conservative think-tank documents and dozens of conservative think-tank press conferences in the 1990s, and many aforementioned high-profile Congressional hearings on climate change convened by conservative Republicans in the past two decades, the conservative movement has promoted a handful of climate change skeptics to national prominence. These climate change skeptics have translated this heightened visibility into increased media presence. Journalists at media outlets are highly cognizant of these contrarian scientists and believe that statements from them will 'balance' a news story on climate change – thus fulfilling their professional obligation of 'objectivity'.

McCright and Dunlap (2003) argue that the media's balancing norm in science reporting – especially in stories about climate change – produces a 'dueling scientists scenario'. Parallel to the 'pro and con' model, reporters solicit statements from scientists holding the most extreme views regarding a scientific issue, regardless of the fact that the bulk of scientists hold positions between the extremes that may reflect a consensus position. For

example, between 1994 and 1997, five climate change skeptics were cited as often in the nation's seven largest circulating newspapers as were the most respected climate scientists of the time (McCright and Dunlap, 2003). Others (Boykoff and Boykoff, 2004; Brossard et al., 2004; Dispensa and Brulle, 2003) have validated this effect in major newspaper and television news. A few of these studies document how differently US media portray climate science (as very unsettled with little or no mention of the scientific consensus) compared to media outlets in other countries. For instance, Brossard et al. (2004) found that the *New York Times* emphasized conflicts between scientists and politicians and potential negative impacts of climate change policy significantly more than did the French newspaper *Le Monde*. Likewise, Dispensa and Brulle (2003) found that the *New York Times* and *Washington Post* reported uncertainty about global warming six times more often than did Finland's *Helsingin Sanomat* and the *New Zealand Herald*.

Reflecting the impact of the US media's idiosyncratic portrayal of climate science, analyses of US public opinion on climate change find a significant proportion of the US public believing that climate science is characterized by considerable uncertainty. For instance, in their review of 20 years of public opinion polls about global warming, Nisbet and Myers (2007: 7) find that:

... the public remains relatively uncertain about whether the majority of scientists agree on the matter. Depending on how the question is asked, belief that scientists have reached a consensus view ranges from only a third of Americans to more than 60 percent.

Leiserowitz (2008) summarizes international public opinion of climate change and finds that the US public has consistently expressed low levels of concern about global warming relative to other nations in numerous cross-national surveys. Indeed, in terms of its view of climate change, the US public is more similar to publics in developing countries than to publics in most European nations. It seems reasonable to believe that Americans' unique views of global warming have been affected by the misleading 'balance' in US media coverage of climate change, as well as the constant barrage of climate change skepticism offered by conservative media like Fox News and commentators like Rush Limbaugh. In fact, self-identified Republicans – a primary audience for conservative media – have become highly skeptical of global warming in the past decade (Dunlap and McCright, 2008), contributing heavily to the American public's overall skepticism.

The Grand Finale

A concerted series of non-decisions late in Bush's second term secured his administration's successful subversion of climate policy action. Thirteen states, several cities and numerous environmental organizations sued the EPA to regulate greenhouse gases (GHGs) under the Clean Air Act in a

court case known simply as '*Massachusetts v. Environmental Protection Agency*' (549 US 497). On 2 April 2007, the US Supreme Court ruled five to four that the Clean Air Act does give the EPA authority to regulate GHG emissions, and it ordered the EPA to examine the extent to which human health and welfare are being harmed by GHG emissions from cars, power plants and other sources – or offer a good rationale for not doing so (Greenhouse, 2007). By late 2007, EPA employees completed a report finding that GHG emissions harm human health and welfare. On 5 December 2007, EPA deputy associate administrator Jason Burnett sent the report via email to the OMB's regulatory review office. For several months, the White House refused to open the email and accept the document (Barringer, 2008). Instead, White House officials convinced EPA Administrator Stephen Johnson to rescind the report.

Still compelled to act because of the Supreme Court decision, the EPA dragged its feet through the first half of 2008 until EPA Administrator Johnson announced on 11 July 2008 that the agency would seek four months of public comment on the human health effects of climate change. At that time, the EPA released a 588-page federal notice – highly edited by White House officials – dismissing scientific knowledge of climate change health effects and highlighting the purported difficulties and economic costs of regulating GHGs (Eilperin and Smith, 2008; Wilson, 2008). Most observers agreed that this tactic allowed the Bush administration to run out the clock on its legal responsibility to regulate GHG emissions under the Clean Air Act.

Thus, what was widely viewed – given the Supreme Court decision – as the best and last chance of forcing the Bush administration to take meaningful action on climate change was successfully thwarted via the familiar practices of misrepresenting and manipulating evidence, intimidating or ignoring agency personnel, and creating new procedures to divert public attention from the major issue. The result is that George W. Bush completed his two terms having gradually acknowledged the reality of climate change, but with his changing rhetoric merely masking perpetual inaction.

Reflexivity or Alternate Realities?

Let us now broaden the focus and return to our initial discussion of reflexive modernization. In recent years, several notable conservative movement activists – Ron Bailey, Frank Luntz and even President Bush – have publicly conceded to the weight of the evidence that human activities are causing climate change. Yet we must keep the following in mind. Congress, and much of the rest of American society, has spent the last 20 years publicly bickering over climate science (even as it has become increasingly credible) rather than debating, formulating and proceeding with any number of mitigation and adaptation strategies for climate change. As a result, until the Obama administration took office, the US government was no closer to dealing effectively with climate change than it was 20 years ago.

The George W. Bush administration (acting as an arm of the American conservative movement) seems to have accomplished its mission of not only blocking meaningful policy-making, but also helping cast additional skepticism on the significance of global warming, with the result that the new Barack Obama administration will have a more difficult task in mustering national support for policies needed to produce a reduction in the nation's carbon emissions in the foreseeable future. Bush himself seemed to recognize and celebrate this accomplishment at the end of his last G8 summit in early July 2008 when – to the surprise of his fellow leaders – he ended the meeting, where he had once again failed to promote international progress on carbon emission reductions, with 'Goodbye from the world's biggest polluter' and then punched the air in celebration (Winnett and Khan, 2008). He might as well have proclaimed, this time with far more accuracy: 'Mission Accomplished!'

All of this highlights the need for RM scholars to devote more conceptual and empirical attention to examining forces of anti-reflexivity, as such forces continue to shape the overall direction of our social, political and economic order, and the life chances of many of our individual citizens in advanced modernity (see e.g. Murray, 2009). Indeed, there is some evidence that elements of the American conservative movement's environmental skepticism are spreading internationally to other nations such as the UK and Germany (Jacques et al., 2008). For example, witness the voices of prominent US climate change skeptics (John Christy, Richard Lindzen, and Patrick Michaels) in such endeavors as *The Great Global Warming Swindle*, which aired on the UK's Channel 4 in 2007.

Leading RM theories maintain that social movements and impact science are critical forces of reflexivity for societies. Yet our understanding of social movements as forces of reflexivity is lacking if we do not also understand the roles that countermovements play. Clearly, the American conservative movement has been a powerful counterforce to the environmental movement. Furthermore, while science is the closest thing we have so far to an ideal speech situation, where evidence may speak truth to power, we must better understand attacks on science – especially impact science – from those sectors, groups and individuals who feel threatened by the results of scientific studies.

Impact science helps us to accurately identify, characterize and begin to solve some of the most pressing ecological, social and technological problems we face (e.g. climate change, biodiversity loss, food security, energy security), especially when environmental scientists and activists disseminate its results and highlight their implications for the public and policy-makers. Thus, developing a better understanding of the forces and power of anti-reflexivity may very well be crucial for societal resilience and adaptation. Postmodern efforts to deconstruct scientific knowledge are little more than an annoyance to natural scientists (see e.g. Gross and Levitt, 1994), but the forces of anti-reflexivity create potentially dangerous situations with real consequences. Indeed, they can lead nations down

dangerously misguided paths. Besides the US government's failure to address climate change in the last 20 years, this is well illustrated by the recent US invasion and occupation of Iraq.

On numerous occasions the Bush administration ignored experts (e.g. UN weapons inspectors) and relied upon highly dubious information (e.g. regarding Iraq's purported efforts to obtain uranium from Nigeria) to fabricate justifications for invading Iraq (e.g. Saddam has weapons of mass destruction). A telling sign of the anti-reflexivity at work in the Bush administration came almost a year before the military invasion. Writing about the Bush presidency, Ron Suskind (2004) recalls a summer 2002 meeting with a senior advisor (presumably Karl Rove) to President Bush:

The aide said that guys like me were 'in what we call the reality-based community', which he defined as people who 'believe that solutions emerge from your judicious study of discernible reality'. I nodded and murmured something about enlightenment principles and empiricism. He cut me off. 'That's not the way the world really works anymore', he continued. 'We're an empire now, and when we act, we create our own reality. And while you're studying that reality – judiciously, as you will – we'll act again, creating other new realities, which you can study too, and that's how things will sort out.'

The forces of anti-reflexivity may try to create their preferred reality, yet eventually the 'real reality' undercuts their socially constructed one – as the US occupation of Iraq unfortunately illustrates. The US and the rest of the world are also dealing with the consequences of the American conservative movement's efforts to impose its version of 'reality' vis-a-vis climate change. The long-term consequences may prove even more deleterious to more people than has the Iraq invasion.

Notes

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1. For the former, see Holland (1999); for the latter, see Bagguley (2003), Pellizoni (1999), and a special issue (vol. 20, no. 2) of *Theory, Culture & Society*.
2. For our purposes here, we focus on reflexivity insights shared by RST and EMT; however, we acknowledge there are significant differences between these perspectives on several crucial matters (e.g. Cohen, 1997).
3. See Krehely et al. (2004) for a recent report on conservative foundations, the think-tanks they fund, the ties linking both foundations and think-tanks to the Republican Party, and the resulting impact on US polities and policy-making.
4. However, fossil fuel corporations are opposing the Obama administration's efforts to promote 'green energy' and implement measures to reduce CO₂ emissions.

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