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Keywords

skepticism, denial, climate change, global warming

A quarter century ago James Hansen's dramatic testimony to the U.S. Senate, in which he stated that global warming had already begun, helped turn a little-known issue into a widely recognized social problem (McCright & Dunlap, 2000). However, not only has little progress been made in dealing with global warming in the ensuing years, but it has become even more problematic as greenhouse gas emissions have continued to rise—generating additional warming and risking increasingly negative impacts on both social and natural systems (National Research Council, 2010).

The complex nature of human-caused or **anthropogenic global warming (AGW)** and uncertainties in the risks it poses make it challenging for laypersons to understand its causes, perceive its impacts, and take actions that might help alleviate future warming (Gifford, 2011; Norgaard, 2011; Pidgeon & Fischhoff, 2011; Weber, 2010).¹ These characteristics of AGW also make formulating and implementing measures that might be effective in limiting the degree and impact of continued warming more difficult for policy makers, leading to AGW being termed a “super-wicked problem” (Lazarus, 2009). This has contributed to the current situation in which there is a significant disjunction between the public's views of AGW and those of the scientific community (Weber & Stern, 2011) as well as policy stalemate (Pooley, 2010). Even though climate science has now firmly established that global warming is occurring, that human activities contribute to this warming, and that current and future warming portend negative impacts on both ecological and social systems (National Research Council, 2010), a significant portion of the American public remains ambivalent or unconcerned (Leiserowitz, Maibach, Roser-Renouf, & Hmielowski, 2012) and many policy makers (especially in the United States) deny the necessity of taking steps to reduce carbon emissions (Brownstein, 2010).

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It is not simply the complexities and uncertainties of climate science that have led to the current situation. From the outset, there has been an organized “disinformation” campaign that has used the complexities of AGW and the inevitable uncertainties involved in scientific research to generate skepticism and denial concerning AGW. The primary strategy employed by this campaign has been to “manufacture uncertainty” over AGW (Oreskes & Conway, 2010), especially by attacking climate science and scientists (Powell, 2011). This appears an effective strategy given that confidence in climate science and trust in climate scientists are key factors influencing the public’s views of AGW (Ding, Maibach, Zhao, Roser-Renouf, & Leiserowitz, 2011; Hmielowski, Feldman, Myers, Leiserowitz, & Maibach, 2012; McCright, Dunlap, & Xiao, 2013).

The campaign has been waged by a loose coalition of industrial (especially fossil fuels) interests and conservative foundations and think tanks that utilize a range of front groups and Astroturf operations, often assisted by a small number of “contrarian scientists.” These actors are greatly aided by conservative media and politicians (Oreskes & Conway, 2010; Powell, 2011), and more recently by a bevy of skeptical bloggers. This “denial machine” has played a crucial role in generating skepticism toward AGW among laypeople and policy makers (Begley, 2007; Dunlap & McCright, 2011).²

For years the denial machine and its campaign attracted little attention, as its operatives succeeded in masking their efforts as legitimate scientific debate while the interests and motives behind their attacks on climate science and individual scientists such as Benjamin Santer were largely shrouded from scrutiny (Oreskes & Conway, 2010). Investigative journalists, most notably Ross Gelbspan (1997), took the lead in analyzing the denial machine, and then a few social scientists joined in the effort (Beder, 1999; Lahsen, 1999; McCright & Dunlap, 2000, 2003). Journalists have continued to make crucial contributions to understanding the denial machine (Begley, 2007; Gelbspan, 2004; Klein, 2011; Mooney, 2005; Pearce, 2010; Pooley, 2010), but particularly in the past 5 years a growing number of social scientists and other analysts—ranging from historians (Weart, 2011) to ex-government officials (Piltz, 2008) to citizens committed to defending climate science (Kintisch, 2011)—also have provided analyses of the denial machine. Additional insights into the campaign against climate science have been provided by climate scientists, especially those who have been subjected to attack (Bradley, 2011; Hansen, 2009; Mann, 2012; Schneider, 2009).

The articles in this symposium contribute to the growing body of social science analyses of climate change denial and skepticism. There is debate over which term is most appropriate for understanding opposition to acknowledging the reality and seriousness of AGW and to climate science itself. Those involved in challenging climate science label themselves “skeptics,” and in some cases this term is warranted, especially for members of the public who—for various reasons—are doubtful that AGW is a serious problem (Leiserowitz et al., 2012). Yet skepticism is an inherent feature of science and a common characteristic of scientists (e.g., Mann, 2012; Schneider, 2009), making it inappropriate to allow those who deny AGW to don the mantle of skeptics.

In fact, there is little doubt that many individuals actively involved in the denial campaign are not skeptical of climate science but are in full denial, and no amount of evidence will convince them of the reality of AGW (see, e.g., Brin, 2010; Powell, 2011; Washington & Cook, 2011). This appears especially true of core actors in the denial machine, ranging from many representatives of conservative think tanks to some contrarian scientists to several bloggers and many of their followers.

It seems best to think of skepticism–denial as a continuum, with some individuals (and interest groups) holding a skeptical view of AGW but remaining open to evidence, and others in complete denial mode, their minds made up. Social scientists are analyzing both phenomena, conducting studies of skepticism among the public (Hobson & Niemeyer, in press; Leiserowitz et al., 2012; McCright & Dunlap, 2011; Poortinga, Spence, Whitmarsh, Capstick, & Pidgeon, 2011; Smith & Leiserowitz, 2012; Whitmarsh, 2011) as well as a rapidly growing number that focus on key elements of the denial machine: conservative think tanks (e.g., McCright & Dunlap, 2000), front groups established by the fossil fuels industry (e.g., Oreskes, 2010), contrarian scientists (e.g., Lahsen, 2008), conservative politicians (e.g., McCright & Dunlap, 2010), and conservative media—especially Fox News (e.g., Feldman, Maibach, Roser-Renouf, & Leiserowitz, 2012), newspapers owned by Rupert Murdoch (e.g., McKnight, 2010), and talk radio (e.g., Akerlof, Rowan, Fitzgerald, & Cedeno, 2012). The contributions to this symposium examine both climate change skepticism and denial.

In the first article, Peter Jacques and I analyze the role of conservative think tanks (CTTs), long recognized as a central actor in the denial machine (McCright & Dunlap, 2000), focusing specifically on their links to the rapidly increasing number of books (108 through 2010) that espouse climate change denial. We find that a majority of the books are linked to a CTT, via either author or editor affiliations or publication by a CTT press, although the link is much lower for the recent spate of self-published books. We also find that over time a larger proportion of these books have been produced in other nations, particularly the United Kingdom, Canada, and Australia, and that books from these nations are strongly linked to CTTs. Last, we find that contrarian scientists with doctorates in natural science disciplines author or edit a declining minority of the denial books.

Myanna Lahsen's contribution focuses on skepticism and denial within the scientific community by reporting results from more than 15 years of field work and observations of scientists involved in atmospheric science and climatology. She makes an important distinction between the true "contrarian" scientists that strongly criticize climate science and in many cases participate in the denial machine, and a range of skeptical scientists. The latter tend to be empirical and theoretical meteorologists who regret and often resent being displaced by the new generation of climate modelers central to contemporary climate science and hold a skeptical view of the validity and utility of their models. Unlike the contrarians, however, these skeptics—whose numbers are dwindling because of retirement and death—are not strongly conservative or antienvironmental and have not joined in the campaign to deny AGW.

Research on the role of conservative media in promoting climate change denial is growing rapidly, and Shaun Elsasser and I contribute to this literature by analyzing a particularly influential element of what has been termed the “conservative echo chamber”—syndicated conservative columnists. Writers such as George Will reach a large segment of the American public through their widely circulated opinion editorials, and the 4 years worth of op-eds by 80 columnists we examine reflect a uniformly dismissive view of climate change and critical view of climate science. We note the major issues they focus on, identify the discredited arguments they employ, and highlight the crucial role they play in amplifying denialist claims.

A constant refrain coming from the denial campaign is that climate scientists are “alarmists” who exaggerate the degree and threat of global warming to enhance their status, funding, and influence with policy makers. The contribution by William Freudenburg and Violetta Muselli provides an insightful empirical test of this charge and finds it to lack support. Drawing on their prior work on the “asymmetry of scientific challenge” (Freudenburg & Muselli, 2010), they argue that the constant criticism coming from the denial machine (e.g., the denial books and conservative media) leads climate scientists to err on the side of caution and that consensus documents such as the assessments issued by the Intergovernmental Panel on Climate Change (IPCC) tend to understate potential climate disruptions.³ They then present evidence that IPCC assessments have in fact understated the degree of subsequently reported climate disruption, supporting their argument.

The mass media play a central role in debates over climate science and policy making, as noted in the next contribution. Maxwell Boykoff draws on his long experience in analyzing how the media represent climate change to provide an analysis of the multiple factors that contribute to “outlier voices”—skeptics, contrarians, and denialists—receiving unwarranted media visibility, and thus influence on policy debates. He demonstrates how and why the mass media have enabled the outlier voices to have an excessive impact on these debates, and thus hamper our ability to have intelligent discussions about developing meaningful actions to ameliorate global warming. In the process he rebuts another common claim of the denial machine, that skeptical voices are suppressed in societal discussions about climate change.

The final contribution focuses on factors contributing to skepticism among the American public, and Anthony Leiserowitz, Edward Maibach, Connie Roser-Renouf, Nicholas Smith, and Erica Dawson focus specifically on the role that the 2009 “climategate” controversy (involving the release of a highly selective sample of emails from leading climate scientists and then constant exaggeration and distortion of their contents by actors in denial machine)⁴ played in contributing to the widely noted downturn in public belief in and concern about climate change during that and the following year. They find that awareness of climategate had a noticeable impact on public opinion, reducing belief in global warming and trust in scientists, but primarily among a segment that was already ideologically predisposed to skepticism. After noting other factors (e.g., poor economic conditions) that may also have contributed to the decline in Americans’ concern about global warming, they end by noting that

2011 polls suggest a reversal of the decline—a trend that seems to be continuing (Leiserowitz et al., 2012).

In sum, this symposium adds to the growing body of scholarly research on the campaign to deny AGW: the actors and interests behind the campaign, the strategies and tactics they employ, and the impacts of the campaign. Clearly more research is needed, especially on the funding sources that fuel the campaign and the impact of skeptical and denial blogs,⁵ but progress is being made in clarifying the sources and nature of climate change denial. By pulling back the curtain on the forces promoting denial, social science (and other) researchers are demonstrating that the reason AGW is highly “contested” has less to do with the nature of climate science or the behavior of climate scientists than with the actions of those who for material and ideological reasons seek to deny the reality of AGW and thus the necessity of taking action to deal with it. Hopefully increased knowledge of how and why climate science has been made to appear controversial will inform future discussions concerning the importance of developing effective responses to the worsening problem of AGW.

Acknowledgments

This symposium is dedicated to the memory of William R. Freudenburg, who passed away prematurely shortly after completing a draft of his essay with Violetta Muselli. Bill was an insightful and innovative analyst of the social dimensions of ecological problems and left an exceptionally strong body of scholarship, as evident in the March 2012 issue of the *Journal of Environmental Studies and Sciences* (Vol. 2, No. 1) devoted to his work.

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Notes

1. I am not suggesting that the overall body of evidence for anthropogenic global warming is “uncertain,” but that inherent uncertainties in climate science—especially concerning future projections of temperature increases and their impacts—pose challenges in communicating the risk of global warming to the public (Pidgeon & Fischhoff, 2011).
2. See Dunlap and McCright (2011, p. 147) for a diagram of the key elements of the denial machine.
3. For a differing but complementary analysis of why climate scientists tend to err on the side of caution, see Brysse, Oreskes, O'Reilly, and Oppenheimer (in press).
4. See Pearce (2010) and Powell (2011) on this controversy, and Mann (2012, chap. 14) for a personal account on how the emails have been used to smear climate scientists.
5. Robert Brulle of Drexel University is completing a study of funding sources.

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