

Talking Past Each Other? Cultural Framing of Skeptical and Convinced Logics in the Climate Change Debate

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Abstract

This article analyzes the extent to which two institutional logics around climate change—the climate change “convinced” and the climate change “skeptical” logics—are truly competing or talking past each other in a way that can be described as a logic schism. Drawing on the concept of framing from social movement theory, it uses qualitative field observations from the largest climate deniers conference in the United States and a data set of almost 800 op-eds from major news outlets over a 2-year period to examine how convinced and skeptical arguments of opposing logics employ frames and issue categories to make arguments about climate change. This article finds that the two logics are engaging in different debates on similar issues with the former focusing on solutions while the latter debates the definition of the problem. It concludes that the debate appears to be reaching a level of polarization where one might begin to question whether meaningful dialogue and problem solving has become unavailable to participants. The implications of such a logic schism is a shift from an integrative debate focused on addressing interests, to a distributive battle over concessionary agreements with each side pursuing its goals by demonizing the other. Avoiding such an outcome requires the activation of, as yet, dormant “broker” categories (technology, religion, and national security), the redefinition of existing ones (science, economics, risk, ideology), and the engagement of effective “climate brokers” to deliver them.

Keywords

institutional logic, cultural frame, issue category, climate change, climate skepticism, logic schism, challenger logic, climate broker

In 1995, the Intergovernmental Panel on Climate Change (IPCC) declared that “the balance of evidence, from changes in global mean surface air temperature and from changes in geographical, seasonal and vertical patterns of atmospheric temperature, suggests a discernible human influence on global climate” (Bolin et al, 1995). That announcement reflected a larger fact that academic scholars in the physical sciences had come to almost universally accept the belief that human

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activity was a major cause of greenhouse gas (GHG) emissions and that these emissions were influencing changes in the global climate.¹ Oreskes's (2004) survey of scientific journals confirms this claim, finding that no research papers published between 1993 and 2003 in the peer-reviewed literature disagreed with the consensus view of the IPCC.

In the face of such scientific support, most social scientists also adopted the idea that anthropogenic climate change was real. While attention to climate change in the social and managerial sciences was slower to develop than in the physical sciences (Goodall, 2008), recent attention to the issue by business and social science researchers has largely neglected debates over the reality of climate change and focused almost exclusively on an assessment of strategy options available to individuals and organizations to address the issue. Many policy makers, businesses, nongovernmental organizations, and the general public shared this acceptance of climate change science as well. A nationally representative sample of the U.S. citizenry showed that 71% of U.S. citizens said they believed in the science of climate change at the beginning of 2008 (Pew Research Center, 2009).

In short, all of these communities had overwhelmingly adopted the view that anthropogenic climate change was a problem and treated this view as a dominant institutional logic. As "the belief systems that furnish guidelines for practical action" (Rao, Monin, & Durand, 2003, p. 795), institutional logics are a critical starting point for understanding the underlying beliefs (Scott, 2001) shaping the climate change debate. However, as Friedland and Alford (1991) explicitly note, institutions inherently contain contradictions and multiple logics are often available to individuals and organizations as they operate within them. This means that along with the dominant logic that climate change is a serious problem warranting action, there also exists a challenger logic (McAdam & Scott, 2005) that asserts that climate change is not a problem at all.

Unfortunately, much of our social science research either takes a relatively dismissive attitude toward those who challenge the scientific view that climate change is real—dubbed "climate skeptics" or "climate deniers"—or subscribes to them sinister motives and neglects their beliefs altogether (see McCright & Dunlap, 2000, 2003, for exceptions). This nearly complete neglect and/or dismissal of a challenger climate logic however, has proven to be a significant oversight on the part of social science researchers in the organizational and policy fields. Within the past 3 years, the logic that climate change is a problem has faced renewed challenge. As a result, scholars, politicians, activists, and business representatives adhering to the dominant logic have recently experienced something akin to "climate whiplash" around the issue.

The shift in the debate began in the fall of 2009 with a series of events that galvanized the climate denier movement and created confusion within the general public. First, the integrity of the scientific community was called into question in November 2009 when a long series of e-mails among climate scientists at the University of East Anglia were released. Dubbed "climategate" by the media, climate deniers claimed the e-mails proved that prominent climate scientists had manipulated and withheld data that disproved the severity of climate change. Subsequent investigations cleared the scientists of wrongdoing (Adam, 2010), although these investigations also called for more transparent communication among climate scientists about data. Additionally, the IPCC publicly apologized in January 2010 for inaccurate claims in the Working Group II document of the 2007 IPCC Fourth Assessment Report that the Himalayan glaciers would likely melt by 2035 (Parry, Canziani, Palutikof, van der Linden, & Hanson, 2007). In the same month, IPCC chair Dr. Rajendra K. Pachauri was accused by a British newspaper of having a financial conflict of interest in his role as chair and personally profiting from climate change science.

Prominent climate deniers quickly adopted these events as a basis for challenging the notion that climate change is a legitimate problem. Coincident with this denier attention was a sharp drop in public acceptance of the reality of climate change. In 2009, a nationally representative survey conducted by the Pew Research Center (2009) showed that belief in the science of climate

change declined from 71% to 57% among Americans between April 2008 and October 2009. Although the Pew Center suggested that the decline may have been due to the severe economic recession that the United States was experiencing (Derbyshire, 2009), the impact of these events on the public discourse around climate change has made it clear that the problem is not a broadly accepted institutional logic and that more than scientific data and analysis are at play in shaping the debate over climate change.

This article seeks to expand our understanding of the climate debate by examining it through the lens of cultural and institutional theories (Bazerman & Hoffman, 1999; Hoffman, 2010; Hulme, 2009; Scott, 2001). Although largely exploratory in nature, it provides a preliminary descriptive analysis of the cultural and social landscape of the climate debate in the United States. Its goal is to examine the presence of ideological and cultural influences on both the definition of the problem and consideration of solutions. As a cultural issue, climate change engages embedded values around issue categories related to religion, economics, risk, freedom, national security, and others (Hulme, 2009). We are, in fact, in what Kuhn (1970) refers to as “revolutionary science,” a period of crisis when an anomalous event or issue challenges the dominant order. As social scientists, our role is to pursue explanations for these challenges and my hope is to spur more social science research on the conflict over climate change at the individual and organizational levels of analysis.

Surprisingly, we do not yet have a framework to talk about the climate debate in the social realm. Drawing on my own training in organizational theory, I rely on social movement theory on framing (Benford & Snow, 2000) and the concept of institutional logics (Friedland & Alford, 1991; Thornton & Ocasio, 2008) to examine the debate over climate change. I treat the issue as a contested terrain in which competing movements engage in discursive debates—or framing battles—over the interpretation of the problem and the necessity and nature of solutions. These movements possess competing institutional logics regarding climate change—what I am calling the “climate change convinced” and “climate change skeptical” logics (for the remainder of the article, these groups will be referred to as simply “convinced” and “skeptical”)—which are communicated through a variety of issue categories (e.g., science, risk, political ideology, and others) and cultural frames (e.g., diagnostic, prognostic, and motivational; Benford & Snow, 2000).

In this analysis, I am careful to distinguish between the organized “climate denier” movement and the broader “skeptical” population. Whereas the organized denier movement is a collective social movement run by professional advocacy organizations working to discredit climate change, such as the Heartland Institute, and conservative think tanks, that produce research and white papers, such as the Cato Institute, the “skeptical” label is ascribed to a population who are doubtful about climate change or the motivations behind calls for climate action in the broader population. Figure 1 shows a stylized depiction of these populations based on opinion polling data from the Pew Research Center (2009). Climate change deniers and believers occupy the extreme positions in the debate, employing a logic that is fairly closed to debate or engagement. The convinced and skeptical populations occupy a more central position in the debate, actively asking questions and debating the issues. A fifth group of those that are disengaged on climate change might also be found in a position between these two groups (Leiserowitz, Maibach, & Roser-Renouf, 2008).

To explore how competing logics are presented within the debate over climate change, I examine the issue categories and cultural frames employed by both convinced and skeptical authors in U.S. newspaper editorials between 2007 and 2009. A critical question is whether these competing movements are engaged in common debate or whether they are “talking past each other” in what amounts to a “logic schism.” I also seek to uncover which categories and frames from the climate denier movement resonate within the skeptical population by drawing on qualitative field research collected at the largest climate denier conference in the United States and recent work on the denier movement by others (McCright & Dunlap, 2000, 2003; Oreskes & Conway, 2010).

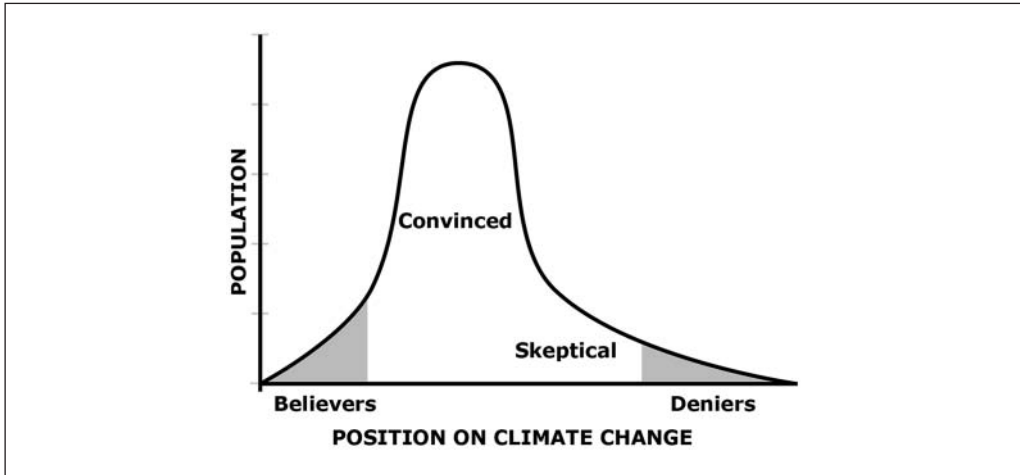


Figure 1. A stylized distribution of American public positions on climate change

Literature Review

Similar to all environmental issues, the issue of climate change is institutionally and culturally rooted (Bazerman & Hoffman, 1999; Hoffman, 2010; Hulme, 2009). Although technological and economic activity may be the direct cause of GHG emissions, cultural norms and societal institutions guide the development of that activity (Bazerman & Hoffman, 1999) in a broad scope of institutional domains: scientific, political, social, and economic (Rosa & Dietz, 1998). But one central aspect of institutions is their resistance to change. In fact, inertia is a primary defining characteristic of institutions (DiMaggio, 1995; DiMaggio & Powell, 1983; Hannan & Freeman, 1977). This inertia may be due to the strength of the taken-for-grantedness of institutional beliefs. Organizations and individuals abide by them often without conscious thought (Zucker, 1983), as they form a culturally supported and conceptually correct basis of legitimacy that becomes unquestioned. But at times, institutional inertia is politically inflected and organizations and individuals mount concerted efforts to promote or resist change based on the ways in which their interests are affected (Fiss & Hirsch, 2005).

Recent and successful efforts by organizational researchers to move beyond institutional isomorphism and stability to explore the dynamics of such activities (Creed, Scully, & Austin, 2002; Emirbayer & Mische 1998; Greenwood & Hinings, 1996) have led to an incorporation of social movement theories of mobilization and contestation to remedy the stability and inertia biases in the institutional literature (Davis, McAdam, Scott, & Zald, 2005; Rao & Giorgi, 2006; Rao et al., 2003; Rao, Morrill, & Zald, 2002; Weber, Heinze, & DeSoucey, 2008). Following this research direction, this article combines organizational theories of logics with social movement theories of framing to understand societal conflict over the meaning of climate change and the action it requires.

Social Movements and Field-Level Debates

Recent discussions in institutional theory have examined the extent to which agents form political networks and coalitions collation act as “important motors of institution-building, deinstitutionalization, and reinstitutionalization in organizational fields” (Rao et al., 2003, p. 796). This conception provides a bridge between institutional theory and social movement theory (Davis et al., 2005),

focusing attention on the ability of social movements to give rise to new organizational fields and change the demography of existing organizational fields (Rao et al., 2002).

In this contest, social movement organizations with similar preferences for change constitute a social movement industry, a unit of analysis not unlike the organizational field. Change agents become part of these collective movements, using shared and accumulated resources and power to “overcome historical inertia, undermine the entrenched power structures in the field or triumph over alternative projects of change” (Guillen, 2006, p. 43). These actions are often conducted in opposition to others in similarly configured collective movements (Meyer & Staggenborg, 1996; Zald & Useem, 1987). Thus, social debates on contested issues are often dominated by polarized groups seeking to alter the dominant logics that permeate the broader debate within multiple constituencies, most notably within the policy realm.

On the issue of climate change, social movement actors have actively mobilized to influence the form and direction of the broader debate. In the climate “denier” movement, there are groups such as the Heartland Institute, Cato Institute, Hoover Institute, Competitive Enterprise Institute, and others. In the climate “believer” movement, there are groups such as the IPCC, the National Academies of Science, the Center for American Progress, the Environmental Defense Fund, and others. The engagement between the opposing movements has had notable influence within specific constituencies that lie between them, within the general public and the social debate over the problems and solutions to climate change.

Consider, for example, the demographic dynamics of the recent shift in beliefs about climate change within the American public. The largest shifts in beliefs from 2008 to 2009 occurred at the extremes of the debate. The percentage of respondents claiming climate change to be “very serious” dropped from 44 to 35 percent and those who see it as “not a problem” increased from 11 to 17 percent (Pew Research Center, 2009). These extreme positions are where one might expect members of the most engaged citizens to reside and can provide views of the contested nature of the debate. But while such surveys provide invaluable snapshots regarding where particular parts of public opinion stands on climate, they do not explain *why* these shifts occur or *how* they might weaken or strengthen climate resistance away from the extremes and more toward the broader social and policy realms. Studying the logics, categories and frames that are employed within the climate conflict presently occurring is one way to gain traction in this effort (see Norgaard, 2006 as an example).

Institutional Logics, Frames, and Issue Categories

Logics can be observed at the level of “organizations, markets, industries, inter-organizational networks, geographic communities and organizational field” (Nigam & Ocasio, 2010, p. 825), and there are frequently competing logics battling for dominance within any given level (McAdam & Scott, 2005). Logics “define the norms, values and beliefs that structure the cognition of actors in organizations and provide a collective understanding of how strategic interests and decisions are formulated” (Thornton, 2002, p. 82) and describe the practices and beliefs embedded within institutions and populations within them. As such, they provide the “organizing principles for institutionalized practices in social systems” (Nigam & Ocasio, 2010, p. 823). So, for example, the institutional logic of capitalism is the “accumulation and the commodification of human activity; that of the state is rationalization and the regulation of human activity by legal and bureaucratic hierarchies (Friedland & Alford, 1991, p. 248). These are the “axial principles of organization and action based on cultural discourses and strategic practices prevalent in different institutional or societal sectors” (Thornton, 2004, p. 2).

On the issue of climate change, we are in a period of flux in which an understanding of the issue and its possible solutions has not yet been fully resolved, despite perspectives within the

academy that it has. As a challenge to the existing scientific and political order has emerged, conflicts and tension between competing logics are brought to the surface through framing debates and discursive contests. The domain in which these challenges are resolved can be described as an institutional “field of struggles” (Bourdieu & Wacquant, 1992) where convinced and skeptical logics are presented and promoted for dominance in describing the emergent and accepted conception of reality.

The skeptical logic has been described as relatively hierarchical and individualistic in nature. Consistent with a capitalist market logic, those who employ this logic will be skeptical of environmental risks, as such beliefs would justify restricting commerce and individual freedom. Conversely, the convinced logic has been described as being more egalitarian and communitarian in nature. Those who employ this logic will be inclined to accept environmental risks because they resent unrestrained commerce and self-interested behavior and readily accept that such activities are dangerous and worthy of regulation (Douglas & Wildavsky, 1982; Kahan, Braman and Jenkins-Smith, 2010; Rayner, 1992). In the field of struggles that exists between these competing logics, those embracing the dominant logic set the rules of the game, and challengers seek to change those rules by replacing dominant principles and actions with logics of their own. The outcomes of such contests have wide-ranging implications for society and social structure, often creating new policy domains and new market segments (Weber et al., 2008).

Tightly linked to logics is the concept of cultural frames and framing processes. Although “both refer to ideas and belief systems and recognize the role they play in providing direction, motivation, meaning and coherence” (McAdam & Scott, 2005, p. 16), logics refer to the power of dominant ideologies and shared worldviews, and frames are used to present and articulate those worldviews. Where institutional ideologies can be thought of as the core beliefs that drive a movement, framing is the strategies of promoting a particular logic. Frames become particularly salient with groups that seek to challenge the dominant logics (McAdam and Scott, 2005) as they are critical for mobilizing a movement and lend structure and organization to a set of specific practices (Swidler, 1986; Weber et al., 2008).

In this article, I focus on three types of collective action frames that social movement organizations typically employ—diagnostic, prognostic, and motivational (Benford & Snow, 2000). Diagnostic frames define problems and focus blame or responsibility, whereas prognostic frames suggest what is to be done about them, and motivational frames tell participants why they should act (Benford & Snow, 2000). These frames are not independent but interconnected. For example, the identification and definition of particular problems within the diagnostic frames can “constrain the range of possible reasonable solutions and strategies advocated” within prognostic frames (Benford & Snow, 2000, p. 616). Motivational frames also provide the rationale for diagnostic and prognostic frames and may include vocabularies of severity, urgency, efficacy, and propriety (Benford, 1993).

The third and final concept in this article is that of the issue category. These are the empirical topics or subjects that underpin logics and form the center around which logics and frames are employed. Hulme (2009) has presented seven such categories, which will form the initial structure for this article. These include science, economics, religion, psychology, media, development, and governance.

A Logic Schism

By analyzing the frames and categories used by proponents of the convinced and skeptical logics, this article seeks to take a first step in uncovering whether these competing logics represent a schism that cannot be resolved. Such schisms arise due to linguistic and value differences that

lead to positions that are relatively exclusive, rigid, inelastic, and restricted. Boundaries become established, which define clear in-group and out-group distinctions (Gamson, 1992).

Pielke (2007) describes the extreme of such schisms as “abortion politics,” where the two sides are debating completely different issues and “no amount of scientific information . . . can reconcile the different values” (p. 42). In such circumstances, two sides are not so much competing as they are talking past one another. For example, whereas those opposing abortion frame it as an issue of “life,” those in favor of allowing abortion frame it as an issue of a woman’s “choice.” These presentations of the issue illustrate how each movement is defined by different logics and uses different types of frames to explain them. These competing and inconsistent frames are reflective of broader logics around religion and family and others. In the end, the rigidity of either side of the debate closes down avenues of examination such that resolution of the issue becomes intractable.

In a logic schism, a contest emerges in which opposing sides are debating different issues, seeking only information that supports their position and disconfirms their opponents’ arguments (Lord, Ross, & Lepper, 1979). Each side views the other with suspicion, even demonizing the other, leading to a strong resistance to any form of engagement, much less negotiation and concession.

Method and Data

To analyze the current debate over climate change, data were collected from two separate sources. The first source of data comes from qualitative research using interviews, texts, and observations at the largest annual climate denier conference in the world—the Fourth International Conference on Climate Change—in May 2010. This 2-day conference is hosted by the Heartland Institute, an organization that lists “building social movements” as one of its stated goals. The organization’s mission is to “discover, develop, and promote free-market solutions to social and economic problems,” and its target audience is the “the nation’s 8,300 state and national elected officials and approximately 8,400 local government officials” (<http://www.heartland.org/about/mission.html>).

The author’s sociology graduate student research assistant with advanced training in qualitative research methods was invited to the conference by a long-time climate denier insider who agreed to attend all the sessions and facilitate informal interviews with conference attendees. The research assistant attended the conference, recorded quotes from conference presentations (also available online at <http://www.heartland.org/events/2010Chicago/proceedings.html>), and conducted informal interviews with conference participants. During these interactions, the research assistant was able to inquire about individuals’ motivations for attending the conference, their organizational affiliations to government or private sector groups, and their climate beliefs. The research assistant relied on the climate denier informant who was also present during these interactions to test and clarify observations against the informants’ understanding of the presentations. Detailed field notes from the conference were recorded after each conference day ended. These source materials—along with work on the organized climate denier movement (Dunlap & McCright, 2010; McCright & Dunlap, 2010; Oreskes & Conway 2010)—provide some initial data on the predominant frames within the formal climate denier movement for making preliminary observations about which of the denier movement’s frames resonate with the skeptical logic in the broader public.

The second source of data comes from an analysis of all U.S. newspaper editorials in the Lexis-Nexis database from September 2007 to September 2009 that included the keywords “climate change” or “global warming.” This search criterion yielded 885 editorials and letters to the editor.

After removing duplicates and nonrelevant articles, the final data set includes 795 articles, which were used to capture the institutional logics and frames within the broader climate debate.

I chose the time period from 2007 to 2009 because of the major shift in climate opinion among the American public that occurred from April 2008 to October 2009 (Pew Research Center, 2009). I decided to focus on climate logics used in newspaper editorials rather than other document sources for several reasons. First, unlike peer-reviewed publications or think tank articles that often attempt to frame their arguments in objective and/or scientific terms, editorials express explicit opinions on climate change, making it easier to identify frames and categories, and classify them as reflecting skeptical or convinced logics. Additionally, I wanted to analyze climate framing in publications that are likely to reach large numbers of lay citizens and become topics of “water cooler” conversation rather than technical reports from think tanks on either side of the climate debate. Finally, editorials provide an appropriate data sample to evaluate climate logics among the media and broader public rather than debates among “policy or scientific elites.” I am cognizant that using newspaper editorial data creates a selection bias for citizens and journalists who have strong opinions regarding climate change and neglects those who are apathetic, unsure, cautious, or disengaged about the issue. According to Yale’s America’s study of climate beliefs among U.S. citizens, the disengaged numbered more than 30% of Americans in 2008 (Leiserowitz et al., 2008). However, for the purposes of this study, the relevant frames come from individuals who have adopted one logic of climate change or the other. They are the ones battling one another, and both sides work hard to convince the cautious and disengaged in the middle that they are correct.

The newspaper data were coded using a coding key developed based on Hulme’s (2009) seven “lenses” to view the climate change debate. Using Hulme’s work as a guide, an initial code key of seven issue categories was created in which the convinced and skeptical authors were likely to invoke particular frames and categories in their editorial writings. The initial key was tested using subsamples of articles, and through multiple rounds of coding and revising the key with the author and research assistants, a comprehensive code key was created that includes frames in the following issue categories: science, risk, technology, economics, religion, political ideology, and national security. See the appendix for the full coding key.

Within each of the seven issue categories, convinced and skeptical arguments were further coded as diagnostic, prognostic, or motivational frames (Benford & Snow, 2000). For example, statements such as, “This is not made-up science, and the most recent studies suggest that the consequences of global warming are occurring faster than previously projected” (Article no. 394) were coded as diagnostic frames under the science category for the convinced logic. For skeptical arguments, statements such as, “Like it or not, the scientific theory that humans are causing the Earth to warm is still in the ‘not sure’ camp” (Article no. 399) were coded as diagnostic science frames.

The newspaper editorials were coded by two Sociology doctoral students with advanced training in qualitative methods. The coders applied global and specific codes to each article using HyperRESEARCH 2.8. First, they coded each article overall as convinced, skeptical, neutral, or unclear. Next, they coded each article sentence by sentence using the code key outlined above. If sentences expressed multiple frames in different issue categories, each frame was coded. Frames were also coded multiple times if they were used more than once in a given article. After coding several subsamples of the data to discuss discrepancies and refine the code key, the coders’ interrater reliability in all but two of the issue categories was .60 or higher (Cohen’s kappa). In the two categories where reliability was lower, the coders discussed their coding differences until agreement could be reached. The articles were also coded for date, newspaper source, newspaper location, author credentials, article length, and whether the article was a letter to the editor.

Findings

Climate Denier Conference Observations

The Heartland Institute conference included presentations by more than 70 climate denier presenters (and 2 climate believer speakers) over a 2-day period with an estimated audience of around 700 conference attendees. The theme of the conference was “Reconsidering the Science and Economics” and was cosponsored by almost 120 nonprofit institutions, including among others: Americans for Tax Reform, Ayn Rand Institute, Cornwall Alliance for the Stewardship of Creation, George C. Marshall Institute, Hayek Institut, John Locke Foundation, New Zealand Climate Science Coalition, Science and Public Policy Institute, and the Tennessee Center for Policy Research.

The presentations consisted of small panel discussions as well as full conference plenary speeches. Many of the speakers used loud, forceful tones during their presentations to express their view that climate change is not a problem, and many also expressed optimism at the recent increase in public skepticism around climate change, the climategate scandal, and the IPCC retractions.

The self-proclaimed climate denier who sponsored the attendance at the conference emphasized that climate deniers in the movement are not monolithic in their views. He noted, for example, that deniers have diverse opinions regarding nuclear energy and energy security, and some are driven more by libertarian ideologies while others connect climate change to social issues. Despite these differences within the movement, the majority of presenters invoked three primary issue categories during the conference—science, ideology, and economics—and a predominant emphasis on addressing the nature of the problem through a diagnostic frame.

Science. Beyond the actual scientific data of climate change, deniers at the Heartland conference focused on what they consider a corrupt and deeply flawed peer-review process in the scientific academic community. In the denier view, peer review is not based on the merit of the research being produced but by the political and social biases of scientists in editorial positions at academic journals (McCormick, 2009; Schrader-Freschette, 1997). One speaker expressed this view most succinctly in his luncheon address when he said, “The problem of science goes back to World War II . . . they moved the peer review process to the pal review process.”

Ideology. The deniers also asserted that science editors only publish work that conforms to their own political beliefs. For many climate deniers, there is a belief that climate change is inextricably tied to a liberal political ideology that borders on socialism or communism. During conference presentations and in conversations with attendees, individuals who believe in the science of climate change were referred to as all the following: Warmists, Alarmists, AGW (Anthropocentric Global Warming) people, Lefties, Communists, and Obama-ites.

One presenter said that climate believers “hate people, they hate the Western economy.” Another went further to suggest, “He who controls carbon controls life,” and told the audience that Americans might end up with carbon rationing cards for every person if climate believers succeed. This speaker also called a Thomas Friedman *New York Times* editorial about the ability of China to do more on climate change faster than the United States, a call for totalitarianism in the United States. Many presenters framed climate change as a tool for a stronger role for government in the personal lives of Americans and a severe restriction on their freedom. For example, a prominent climate denier scientist who was running for the U.S. House of Representatives expressed this view in a campaign video shown at the conference. He said, “All of our industries have been hampered by government regulation . . . climate change is just another attempt to diminish our freedom.” Another speaker made links to the environmental movement and ideology by saying, “The environmental agenda seeks to use the state to create scarcity as a means to exert their will, and the state’s authority, over your lives.”

Economics. Deniers also invoked the concern that addressing climate change will have severe and negative economic consequences for the United States. Deniers suggest that inaction on climate will provide economic advantages to the United States. According to one well-known climate denier, “Doing nothing about climate change is doing something. It enables people to keep their money and invest it in the future.” Deniers are also critical of climate action proponents push for “green jobs,” with one speaker suggesting that it is just another “ideological push for a Euro-style [economic] disaster.” In a panel on the economic impacts of climate and energy policies, one speaker argued that even seemingly market-based policies to address climate change such as cap and trade are just a way for big business to rent-seek. He specifically named Exelon as an example of a utility that supports all climate legislation because it is highly invested in nuclear power and will be in a favorable position to sell credits.

Overall, the field observations at the Heartland Institute Conference show a denier emphasis on three issue categories (science, ideology, and economics) and a diagnostic frame. The presentation of this emphasis aligns closely to the observations of others who have studied the climate denier movement (i.e., Dunlap & McCright, 2010; Oreskes & Conway, 2010) and finds it possesses a deep suspicion of environmentalists, perceiving them to be a threat to freedom, capitalism, and democracy. For many in the climate denier movement, climate change is part of a larger culture war against liberal social and/or economic views as well as an environmental agenda that is viewed as a threat to deniers’ values and their conception of the American way of life.

Newspaper Coding

Descriptive data. The overall position on climate change within the newspaper article data mirrors national public opinion data for 2008 (see Table 1). In all, 73% of articles ($N = 578$) were convinced and 20% were skeptical ($N = 155$), in-line with Pew Research Center (2009) findings that 71% of Americans believed there is solid evidence that the Earth is warming in 2008, and 21% did not believe while 8% were unsure (Pew Research Center, 2009).² Given this disparity in the convinced and skeptical sample sizes, I do not compare the raw numbers of frames and categories used by each side, but rather the percentage of articles under each logic.

Table 1. Overall Article Position

	Frequency	Percentage
Convinced	578	72.7
Skeptical	155	19.5
Neutral	27	3.4
Unclear	35	4.4
Total	795	100

Convinced articles were found to be more likely presented through op-eds whereas the skeptical articles were presented more commonly through letters to the editor (see Table 2). Just over 25% of convinced articles were letters to the editor whereas almost 60% of skeptical articles were letters to the editor (chi-square $p \leq .001$).

Whereas journalists wrote more than 46% of convinced articles, they only authored 32% of skeptical articles as shown in Table 3 (chi-square $p \leq .01$). As a comparison, citizens authored nearly 55% of skeptical articles compared with 21% of convinced articles (chi-square $p \leq .001$).³ Notably low in the authorship of all of the climate change articles (convinced and skeptical) are scientists, academics, and policy officials. Presumably, these experts write about climate change

Table 2. Article Type

	Convinced (%)	Skeptical (%)	χ^2	p Value
Letter to the editor	28.37	58.84	38.16	.000
Not letter to the editor	71.63	41.16		
Total	100	100		

Table 3. Author Credentials

	Total (%)	Convinced (%)	Skeptical (%)	χ^2	p Value
Academic (nonscientist)	3.68	3.98	2.58	0.67	.412
Physical/natural scientist	4.64	4.68	4.52	0.01	.935
Journalist/editorial staff	43.38	46.37	32.26	9.91	.002
Elected official	2.86	3.29	1.29	1.75	.186
Civil servant nonelected	1.64	2.08	0	3.27	.070
Professional researcher	1.36	1.38	1.29	0.01	.929
Citizen	28.24	21.28	54.19	65.34	.000
Corporate executive	2.05	1.29	2.58	0.28	.597
Activist representing a formal organization	8.46	10.55	0.65	15.50	.000
Educator (noncollege)	1.64	2.08	0	3.27	.070
Clergy	0.68	0.87	0	1.35	.245
Nongovernmental organization representative	0.68	0.87	0.00	1.35	.245
Other	0.68	0.69	0.65	0.00	.950
Total	100	100	100		

in venues other than newspaper editorials, but the degree to which their messages regularly reach lay audiences is unclear.

Issue categories. This analysis of the skeptical and convinced logics began by looking at the issue categories that are employed in the debate over climate change. Shown in Table 4, each logic has dominant, secondary, and latent categories of interest that are similar and different in several ways. Most prominently, they share a dominant category of political ideology.

For the convinced, the dominant categories (more than 50% of the articles reference it) are risk (chi-square $p \leq .001$) and political ideology (chi-square $p \leq .05$). The secondary categories of concern (more than 20% of articles mention it) are science (chi-square $p \leq .001$) and religion (chi-square $p \leq .001$). The latent or dormant category (less than 20% of articles mention it) is national security (chi-square $p \leq .001$). For the skeptical, the dominant categories are science (chi-square $p \leq .001$) and political ideology (chi-square $p \leq .05$), and the secondary issue category is risk (chi-square $p \leq .001$). Religion (chi-square $p \leq .001$) and national security (chi-square $p \leq .001$) are latent or dormant. Results for economics and technology were not significant.

Not surprisingly, almost 90% of skeptical articles reference science. It suggests that the skeptical logic centers on the idea that the problem definition of climate change is the crux of the debate. For the skeptical, there is no problem or there is uncertainty about whether there is a problem. This

Table 4. Climate Change Convinced and Skeptical Articles by Issue Category^a

	Convinced (%)	Skeptical (%)	χ^2	p Value
Science	36.85	87.74	126.91	.000
Risk	62.11	34.19	38.70	.000
Technology	9.69	5.16	3.14	.076
Economics	24.22	21.29	0.58	.445
Religion	35.12	5.81	51.09	.000
Political ideology	59.00	67.74	3.92	.048
National security	11.07	1.29	14.28	.000

a. Percentage of articles that use a category type one or more times.

Table 5. Climate Change Convinced and Skeptical Articles By Frame Type^a

	Convinced (%)	Skeptical (%)	χ^2	p Value
Diagnostic frame	60.38	94.19	63.73	.000
Prognostic frame	80.45	40.65	96.13	.000
Motivational frame	50.87	42.58	3.36	.067

a. Percentage of articles that use a frame type one or more times.

bears some resemblance to the qualitative field analysis of the climate denier movement, whose primary issue categories were science, ideology, and economics, suggesting at least some overlap exists between the categories of the formal social movement and those of the broader skeptical logic. For both skeptical and convinced logics, national security is a latent or dormant issue category, suggesting either this debate domain that has been rejected or not yet addressed.

Frames. Looking more deeply at the frames that are presented within each logic, Table 5 shows that within both the skeptical and convinced logics, all three types of frames are used (diagnostic, prognostic, and motivational), although each has one dominant frame and two secondary foci. Results for both the diagnostic and prognostic frames are statistically significant (chi-square $p \leq .001$) while the motivational frame is not.

Skeptical authors were fairly singular in their framing of the issue, with almost 95% of articles using diagnostic frames to call into question the problematization of climate change. The majority of this questioning centered on the science behind climate change, as illustrated by this skeptical newspaper quote:

Did you know that global temperatures have been falling, not rising, for the past decade—despite the IPCC's predictions of a steady rise? Have you ever heard the maxim, "If the facts contradict the theory, find a new theory"—a maxim now being ignored by our leaders? (Article no. 84)

Conversely, the types of frames invoked for convinced arguments, while predominately prognostic, are more evenly distributed. Diagnostic and motivational frames are both used in more than half of the convinced articles. From this observation, there appears to be more frame heterogeneity in the convinced versus frame homogeneity in the skeptical logic.

Linkages between frames and issue categories. Although the skeptical logic broadly addresses climate change as an issue of science and political ideology (Table 4) and uses a diagnostic frame (Table 5), and the convinced logic addresses climate change as an issue of risk and political

Table 6. Climate Change Convinced and Skeptical Articles by Issue Category and Frame Type^a

	Diagnostic Frame				Prognostic Frame				Motivational Frame			
	Convinced (%)	Skeptical (%)	χ^2	<i>p</i> Value	Convinced (%)	Skeptical (%)	χ^2	<i>p</i> Value	Convinced (%)	Skeptical (%)	χ^2	<i>p</i> Value
Science	36.85	87.74	126.91	.000	0	7.74	45.49	.000	2.42	12.26	27.50	.000
Risk	39.97	9.68	50.29	.000	37.54	9.68	43.87	.000	12.63	24.52	13.44	.000
Technology	0	0			9.69	5.16	3.14	.076	0	0		
Economics	0.87	0.65	0.07	.787	5.19	3.87	0.46	.500	21.28	20.65	0.03	.863
Religion	0	0			19.72	5.81	16.95	.000	22.32	0	41.98	.000
Political ideology	23.53	58.06	68.35	.000	45.85	22.58	27.37	.000	5.02	0.65	5.95	.015
National security	3.81	0	6.08	.014	1.90	0.65	1.20	.273	6.75	0.65	8.82	.003

a. Percentage of articles that use a frame and category type one or more times.

ideology (Table 4) and uses a prognostic frame (Table 5), the more detailed findings shown in Table 6 reveal important differences in the fine grained form of the debate.

First, almost 60% of all skeptical articles in the political ideology category use a diagnostic frame (chi-square $p \leq .001$) to suggest that the science of climate change is politically motivated. Similar to the terminology of the climate denier movement, nearly 25% of all skeptical articles refer to climate change proponents as “alarmists.” More specifically, the dominant political target of these arguments is Al Gore, who is blamed by skeptical authors for fabricating the problem of climate change for ideological and personal gain. A word count of all the skeptical articles showed that nearly 40% of them mention Gore in one fashion or another. The following quote colorfully captures the skeptical logic’s predominantly negative view of the former Vice President:

Al Gore wanders the spheroid he is determined to save, spouting increasingly inane observations as his bank account grows and his “carbon footprint” becomes ever more Godzilla-like, considering all the jet fuel burned as he hurtles from appearance to appearance. I have read that his speaking fee is now \$175,000 a pop, a fee for which his audiences are fed what seems to me to be an amazing concoction of lies, distortions and flights of fancy. (Article no. 62)

As a contrast, convinced articles invoke prognostic frames under the political ideology category more often than diagnostic frames (chi-square $p \leq .001$), placing emphasis on what type of federal climate legislation should be passed. Even when convinced authors do not like the form that climate legislation or climate action may take politically, they are generally supportive of doing something about it through legislation or regulation. This convinced author, for example, suggests that any vote for cap and trade is better than nothing:

There is much in the House cap-and-trade energy bill that just passed that I absolutely hate. It is too weak in key areas and way too complicated in others. A simple, straightforward carbon tax would have made much more sense than this Rube Goldberg contraption. It is pathetic that we couldn’t do better. It is appalling that so much had to be given away to polluters. It stinks. It’s a mess. I detest it. Now let’s get it passed in the Senate and make it law. (Article no. 72)

It is also interesting to note that, although skeptical articles focus less on prognostic frames for climate change under political ideology than convinced authors (because of their opposition

to climate legislation), more than 20% of skeptical ideology articles include prognostic frames (chi-square $p \leq .001$). These articles generally suggest legislation (carbon tax or cap and trade) should not be passed. The vast majority of the skeptical ideology prognostic frames focus on the argument that fast-growing developing countries such as China, India, and Brazil have to commit to GHG reductions before the United States should take any action.

Perhaps the most interesting difference between the two logics manifests itself in the risk-issue category. Shown in Table 6, the convinced risk articles use mostly diagnostic and prognostic frames (chi-square $p \leq .001$) that emphasize the physical, social, and health risks from climate change, as well as the urgency to act. For the convinced, the concern seems to be *both* convincing readers that climate change is a risk (diagnostic) and something we must address with action now (prognostic). Slightly more of the total diagnostic frames used by convinced authors are about risk as opposed to science. This suggests that the convinced are shifting away from defining climate change as a problem of science and moving toward defining it as an issue of risk. For example, the quote below is illustrative of a convinced risk diagnostic frame that argues that climate change will increase the risk of severe and complex weather disruptions.

Global warming does not imply that it will be 50 degrees in the winter in Michigan. What it does mean is that the depletion of the ozone layer and subsequent warming of the earth's oceans and crust will lead to continually worsening weather phenomena when typically cold arctic air masses meet the now warmer air masses coming from the oceans. Consequently, thunderstorms, rainfall, snowfall, tornadoes, hurricanes, tsunamis, and temperature fluctuations to the lower or higher will in fact be much more frequent as well as severe. Climate change is a complex combination of factors that results in a myriad of weather aberrations. (Article no. 243)

The convinced authors do not stop at defining climate change as a risk, however. They also express actions they believe must be taken to address the issues. The following convinced risk prognostic article expresses this sentiment:

The problem, when it comes to motivating politicians, is that the dangers from global warming—drought, famine, rising seas—appear to be decades off. But the only way to prevent them is with sacrifices in the here and now: with smaller cars, bigger investments in new energy sources, higher electricity bills that will inevitably result once we put a price on carbon. (Article no. 11)

For the skeptical, the framing of risk is focused much more on motivations than diagnosing the problem or suggesting actions to take (chi-square $p \leq .001$). Although risk is a secondary issue category for skeptical authors, over a quarter of all such articles make a risk motivational argument to focus on the positive externalities that will occur due to climate change (e.g., longer growing seasons) or the risks to quality of life if climate change is addressed. For example, this skeptical risk motivational article states that, "Not all the effects of climate change negatively affect agriculture; growing seasons will be longer and increased carbon dioxide levels encourage plant growth." (Article no. 151)

Discussion

When one thinks about the climate change debate, it is sometimes tempting to first refer to the political discourse on the issue, particularly around the Waxman–Markey Climate Bill (HR 2454) that was approved by the U.S. House of Representatives on June 26, 2009 by a vote of 219 to 212.

That debate was at times vitriolic, suggesting an intractable divide exists over climate change in Congress. Representative Joe Barton (R-TX) equated the Waxman–Markey Bill with regressive development.

. . . you can test drive Waxman-Markey by sailing down to Haiti, because current CO₂ emissions are where Waxman-Markey wants America's to be in 2050. Radical environmentalists think such a CO₂ level will be heaven on Earth, but the place that has actually achieved it is a nation swimming in bacterial and protozoal diarrhea, hepatitis A and E, typhoid fever, dengue fever and malaria, with 47 percent illiteracy and a life expectancy of 49 years. (Barton, 2009)

On the opposite side of the debate, Senator Bernie Sanders (D-VT) equated climate deniers to Nazis:

It reminds me in some ways of the debate taking place in this country and around the world in the late 1930s. During that period of Nazism and fascism's growth—a real danger to the United States and democratic countries around the world—there were people in this country and in the British parliament who said “don't worry! Hitler's not real! It'll disappear!” (Montopoli, 2010)

In the shadow of such acrimony, the goal of this article is to uncover whether competing logics within the broader climate debate represent a logic schism and if so, whether that schism has reached such a point that it cannot be resolved. The form of the political dialogue illustrated above (which may be suggestive of the denier/believer extreme of the debate) suggests a conflict of positions that are relatively exclusive and rigid, positions that will not yield to negotiation and resolution because they define and establish very strong in-group/out-group distinctions (Gamson, 1992). At the national level at least, it appears that for some of the more extreme elements, political debate has broken down and the two sides are talking past each other.

Similar to the divisions in the political rhetoric, the denier movement field observations in this article show an antagonistic posture toward the believer movement. And, it appears that some of the themes present in the denier social movement are present in the broader skeptical movement represented by the newspaper article data. A focus on the diagnostic framing of the issue is central within both domains with the issue categories of science, ideology, and economics dominant in the denier movement and the issue categories of science and ideology within the skeptical logic.

The coding results of newspaper articles also show a division between the skeptical and convinced logics with the former devoting a great deal of attention to the diagnostic frames around whether climate change is actually happening as a man-made phenomena, and the latter moving to the prognostic frames of accepting the nature of the problem and attending to solutions. This result is suggestive that they are engaging in different debates over climate. This form of division should not be unexpected as debate and control of this initial diagnostic frame is critically important to the identification and definition of the problem. Such diagnostic frames “constrain the range of possible reasonable solutions and strategies advocated” (Benford & Snow, 2000, p. 616). If the skeptical position moves to the prognostic, they accept a bounded set of solutions that have been predetermined by the accepted form of the definition of the problem.

The skeptical logic is predominantly built on a diagnostic frame around the issue categories of science and ideology, whereas the convinced logic is predominately built on the prognostic frame around risk and ideology. Within the convinced logic, arguments span the spectrum of all three frames, suggesting continued engagement in a debate with the skeptical logic over the validity of the science. But, looking more deeply at the linkages between frames and issue categories,

particularly around ideology and risk, suggests a deeper logic schism than a strict focus on types of frames and issue categories alone can reveal.

Clearly, both logics view climate change as a political issue and engage on the issue by talking about political ideology, politics, and legislation. However, they do not frame the issue of political ideology in the same way. This is likely a reflection of the overall split in dominant frames between the two logics. Skeptical authors almost unanimously question the definition of the problem and who is to blame, using a diagnostic frame for political ideology to suggest that climate change is not a real scientific problem but rather a problem of morally questionable political figures. Convinced authors invoked a prognostic frame for political ideology, placing emphasis on what type of federal climate legislation should be passed to do something about a problem that has already been defined. Where convinced articles emphasize the physical, social, and health risks from climate change, skeptical articles focus on the risks to quality of life if climate change is addressed and the positive externalities that will occur due to climate change (e.g., longer growing seasons). Risk is built on two completely contrasting assessments of the threat at hand, one coming from inaction and the other from action.

As one final note, there were two surprising results in the data. First, it was surprising to find that religion was more likely to be invoked as an issue category by the convinced than skeptical authors. Contrary to what many believe is a skeptical movement driven by the Christian right (see Nerlich, 2010; Wardekker, Petersen, & van der Sluijs, 2009; Wilkinson, 2010), it was the convinced authors who were more likely to invoke moral arguments for climate action directly, as highlighted by this quote:

Climate change poses a myriad of difficult challenges—scientific, political, economic and technological. But more important than any of that, it poses a moral challenge. It asks whether we are so bound to our own comfort, so resistant to any suggestion of slight sacrifice, that we will risk condemning future generations to a profoundly diminished planet. (Article no. 735)

Second, it was surprising to find that national security arguments were not invoked more often by convinced authors. One might have thought that national security would be another possible issue category that the convinced would use to persuade the undecided and skeptical that climate is a problem worth addressing. One possible explanation is that the national security frame is invoked more often by climate believer social movement actors writing white papers for think tanks and policy institutes that do not reach lay citizens as easily.

In summary, there appears to be a deepening schism between the skeptical and convinced logics, one that rests on foundational arguments that are based on different worldviews, different issues, and different frames to communicate them. Much like the schism that exists between the denier and believer movements, the opposing skeptical and convinced logics within the broader public appear to be reaching a level of polarization where one might begin to question whether meaningful dialogue and problem solving has become unavailable to participants. Further research can provide a better understanding and better terminology to explain the details of this debate as well as examine how the debate takes form in different cultural and national contexts. The final sections of this article discuss the scholarly and policy implications of this preliminary result.

Scholarly Implications

In the institutional “field of struggles” (Bourdieu & Wacquant, 1992) where multiple models are presented and promoted for dominance in describing the emergent and accepted conception of reality, it is the institutional logics that form the underlying and supporting tension of this contest

as well as the building blocks out of which a new reality will be formed. But, the organizational literature on institutional logics suggests that when competing logics confront one another in organizational fields, both sides actively consider their own position in relation to those of other logics (Rao et al., 2003, Suddaby & Greenwood 2005, Weber et al., 2008). This article has shown that these studies assume too quickly that field debates occur in such a streamlined fashion. The contest over climate change suggests that logics are largely problematizing the issue and talking about solutions in very different ways. More important, this article has explored a context in which competing logics have become polarized and oppositional to an extent that debate and engagement may have broken down. Under such circumstances, new studies are required to explore the dynamics by which this happened. What were the critical events or actions that lead to such a situation and can it be reversed once it becomes set?

Several avenues have been exposed that may be fruitful for exploring facets of this question. First, there is the question of whether a logic with a single dominant frame type—like diagnostic frames under the skeptical logic—will be more or less successful in a competing logics scenario with a logic that uses more diffuse frames to express its worldview. Second, the field research data raises research questions about how frames and categories from social movement actors (e.g., the climate denier movement) do or do not resonate with larger populations who would locate themselves under the skeptical logic. Third, this article exposes the need to understand more clearly the ways in which frames from both climate deniers and climate believers become translated by the media—an important information channel in public debates—and absorbed by citizens and politicians to understand the dynamics. Although existing research has studied the role of the media in framing climate science (i.e., Boykoff & Boykoff, 2007; Boykoff & Rajan, 2007), much less has been written to understand how climate denier arguments are presented. As the ultimate aim in this article has been to spark more research on how culture affects (and is affected by) the climate change debate, more questions have been raised than have been answered and I hope others will follow.

Finally, apart from examining these aspects of competing logics within the climate change debate, this article's analysis has sought to make two other, less obvious contributions: the need to attend to an overlooked constituent in social science research, politically conservative movements; and the importance of increased problem-based research.

Ignoring the politically conservative in society. Social movement theorists have been criticized—and have criticized themselves—for not attending enough to politically conservative movements, although this has begun to change (see Blee & Creasap, 2010). The dearth of research on climate resistance, uncertainty, and apathy must change to understand the full landscape of the conflict. In short, it is problematic to sample on the dependent variable, and it is folly to only research organizations and debates among groups that already agree that solutions to climate change are necessary (Hoffman, in press). We also need to attend to those opposed (and indifferent) to climate change action to understand the landscape of the debate more completely. Historians are currently doing this better than social scientists (Oreskes & Conway 2010).

The call for more problem-based research. This analysis has also sought to make a contribution toward producing problem-based research (Biggart & Lutzenhiser, 2007; Davis & Marquis, 2005). Problem-based research draws on theoretical principles for problem examination and aims for building general theory. But, it creates value by providing deeper and richer explanations of critical problems in our world. Research findings under the problem-based approach are designed to be robust observations (Hoffman & Jennings, in press) that can lead to both the exploration of generic mechanisms that apply to problems of a similar class and the introduction of theoretical approaches to policy domain. Few contemporary issues warrant social and cultural analysis by problem-focused researchers more than environmental sustainability issues, and such analysis can aid in providing greater “rigor and relevance” in the assessment of our research questions

(Tushman & O'Reilly, 2007). Social scientists have a duty to bring this type of research into the public sphere to help resolve such a pressing debate (Hoffman, in press), even if our answers are not definitive.

Policy Implications

At the core of this article is the observation that the debate about climate change is as much a cultural debate as it is a scientific debate. Science does not have the definitive final word on whether society accepts climate change as a problem worth addressing. Thus, the social constituency that is relevant in this debate goes beyond scientific experts and extends to broader members of society. Although anthropogenic climate change has now reached the level of a scientific consensus (National Research Council, 2010),⁴ it has not yet reached the level of a social consensus (Durkheim, 1895/1982), one that emerges, not from individual responses and preferences, but from the social community that socializes each of its members (Farganis, 2004). Interestingly, this analysis shows first that academic scientists are relatively absent from this social debate, comprising less than 5% of article authors. Although not a unique finding (i.e., Painter, 2010), this should be a cause for concern among those who seek an educated electorate on such complex scientific and social issues.

Second, this article highlights that social scientists, by neglecting the skeptical logic, are neglecting a critical component of the social debate that is taking place. To fully understand the climate debate, constituents must attend to the deeper cultural logics that are employed by opposing sides of the issue. Far more than science is at play in this issue (Hulme, 2009; 2010); climate change engages a rich portfolio of cultural logics, frames, and issue categories that must be exposed to fully understand the social landscape of the debate.

Finally, those interested in the policy implications of this article's findings may also want to draw on theories regarding dispute resolution and power to think about their way forward. An important aspect in which culturally based conflicts such as climate change differ from other types of conflict most often studied by behavioral negotiation theorists is the extent to which they involve core values and ideological beliefs. In contrast to simple economic exchanges, the issues in culturally based negotiations are very closely associated with participants' identity. Individuals' positions in ideologically based conflicts typically emerge from beliefs at the core of who they are—"what they believe about the reality of the world, how the world behaves, what fundamental rights people have, notions of justice, and what is right and wrong" (Wade-Benzoni et al., 2002, p. 43). These beliefs can be deeply influenced by social movement politics such as what is taking place in the climate change debate. And the resultant politics they invoke can lead to two possible outcomes in the form of the debate.

Integrative form of the dispute. Resolution of the debate over climate change would likely require an integrative shift (Raiffa, 1985) in the focus of the discussion away from positions (climate change is or is not happening) and toward the underlying interests and values that are at play (the validity of the scientific process, the risk related to the likelihood and impact of action or inaction, the economic implications of action or nonaction, and the myriad ideological issues around personal freedom, the proper role and size of government, and others).

Although this study shows that the debate is centered presently on the issues of science and risk, it also notes that the activation of, as yet, latent or dormant issue categories of religion, technology, and national security and the redefinition of existing issue categories of science, economics, risk, and ideology may create possible "broker" issue categories to resolve differences. When presenting the climate change issue, it is critical that the frames and categories used do not threaten people's values and therefore create dismissive resistance to the argument. Instead, the issue must be presented in a manner that is culturally congenial to target audiences (Earle & Cvetkovich, 1995; Fisher & Shapiro, 2006; Kahan, Braman, & Jenkins-Smith, 2010).

Frames and categories can provide a template for the kinds of bridges that are necessary for finding common ground and expanding the solution space to difficult issues.

Similarly, individuals with credibility on both sides of the debate would be necessary to act as “climate brokers” in this realm. People are more likely to feel open to consider evidence when it is accepted or, ideally, presented by a knowledgeable member of their cultural community (Fisher & Shapiro, 2006; Kahan et al., 2010). Conversely, they will dismiss information that is inconsistent with their cultural values when they perceive that it is being advocated by experts whose values they reject. Given that only 35% of Republicans believe there is solid evidence of global warming compared with 75% of Democrats (Pew Research Center, 2009), the most effective broker would best come from the political right. At present, no one is playing this role.

Finally, the timing of the engagement of such climate brokers would best follow in the wake of critical events. Contextually dramatic happenings can focus sustained public attention and invite an opportunity for social and institutional entrepreneurs to direct the form of debate on critical social issues. These events become openings for recasting the political landscape of social movement organizations and the resultant collective redefinition of social institutions and institutional logics (Hoffman & Ocasio, 2001; Nigam & Ocasio, 2010).

A logic schism. Although these tactics are useful in an integrative scenario, if the debate over climate change regresses into a fully developed logic schism, the solution space for resolving debate collapses and negotiations become a win–lose scenario in which the two sides fight a distributive battle over concessionary agreements with each side pursuing its goals by demonizing the other (Bazerman & Neale, 1992). Environmentalists are perceived as insensitively seeking environmental protection at all costs and willing to sacrifice economic development and human economies toward that end. Economic interests are perceived as pursuing economic growth at all costs, willing to forfeit environmental considerations to increase profit. With this mind-set, joint solutions through cooperative decision making become virtually impossible (Bazerman & Hoffman, 1999) and the dynamics of interaction become based on power, domination, and coercion. In such a scenario, interests and values are no longer the basis of engagement and outcomes are not likely to be optimal.

Conclusion

This article has analyzed the extent to which the logic and cultural debate around climate change represents a logic schism. This is an area that social sciences can add a great deal to further understanding in the social and policy arena. Unfortunately, the contemporary presentation of academic scholarship in the climate change debate is largely dominated by the fields of economics, engineering, and law. If social scientists that focus on cultural and social phenomenon want to engage as well, they must bring their academic tools to bear on problem domains such as climate change. It is not enough to say the science is decided if the skepticism countermovement remains active and public uncertainty increases. Organizational researchers and social theorists have unique theories and methods at their disposal to explain why climate change is a polarizing issue in some settings and not in others and why some organizations support or resist efforts to mitigate GHG emissions (Hoffman, in press).

If successful in spurring greater scholarly interest in the cultural, ideological, and institutional elements undergirding the climate debate, research in this area—similar to all contentious social problems—will be undertaken by social science scholars using a variety of different theoretical approaches. Scholars who are more comfortable with normative research may take a critical theory stance toward climate skepticism, but others will approach the issue through the lenses of rational choice theory, game theory, organizational theory, economic sociology, and so on. I remain agnostic about which of these approaches will be the most successful at explaining the drivers behind and ultimately the outcomes of—the climate debate and believe this is best sorted out in robust academic as well as public debate.

Appendix

Newspaper Op-Ed Coding Scheme

0. Science					
	Frame	Code	Certainty	Code	Uncertainty
1	Scientific certainty	Diagnostic 101	Says the consensus process by which IPCC (Intergovernmental Panel on Climate Change) concludes that climate change is happening is appropriate/rigorous Stresses certainty of climate evidence. Cites climate change as a certain fact (i.e., "it is happening")	201	Says the IPCC process for determining the scientific evidence around climate change is flawed
2	Causes of climate change	Diagnostic 102	Skeptics have the science wrong Consensus exists	202	Stresses uncertainty of climate evidence/climate models Denies climate evidence entirely (climate change a myth, hoax). Cites support for global cooling Believers have the science wrong Consensus does not exist
3	More research needed	Prognostic 103	Climate change is caused by humans (e.g., by combusting fossil fuels, consumption, etc.) No more research is needed	203	Climate change is not caused by humans or is caused by natural forces More research on climate change is necessary
4	Scientists' agenda	Motivational 104	Scientists calling for action are neutral experts Scientists have strong professional norms that stress neutrality and objectivity	204	Scientists calling for action are ideologically motivated/using evidence selectively Scientists are economically motivated in their results (e.g., working to get more grant money)

(continued)

Appendix (continued)

		I. Risk		
	Frame	Code	High	Low
5	Precautionary principle (also urgency and act now!)	105	<p>Argues for the precautionary principle; it is better to be safe than sorry</p> <p>Regardless of evidence for or against climate change, it is prudent to take action (we should do something)</p> <p>What does it hurt to act?</p> <p>We need to act now! Action needed now to solve this urgent problem</p>	<p>205</p> <p>Argues that we have time to wait for more scientific clarity before actions are needed</p> <p>Since there are questions about the evidence on climate change, the risk isn't great enough to act</p>
6	Physical risks	106	Physical risks are/will be real and present (e.g., hurricanes, droughts, melting ice, species extinction, biodiversity loss)	<p>306</p> <p>Physical risks are exaggerated, hyped, and overplayed, or only apply to others (i.e., developed countries)</p>
7	Public health risks	107	Health or social risks are/will be real and present (e.g., disease, public health disasters)	<p>207</p> <p>Health risks are exaggerated, hyped, and overplayed, or only apply to others (i.e., developed countries)</p>
8	Externalities	108	Addressing climate change will cause positive social externalities (e.g., public health benefits)	<p>208</p> <p>Addressing climate change will cause negative externalities (e.g., poorer quality of life)</p>
			Addressing climate change will help us avoid terrible consequences from social or physical risks listed above (we must act)	<p>Addressing climate change will not affect our ability to deal with social or physical risks</p>
			Addressing climate change will cause positive environmental externalities (cleaner air, better environment, etc.)	<p>Not addressing climate change will cause positive externalities (longer growing seasons, milder winters, better quality of life)</p>

(continued)

Appendix (continued)

		2. Technology		
	Frame	Code	Low	High
9	Type of technology (picking winners)	109	<p>Questions carbon capture and sequestration (CCS) technology feasibility or timetable to being operational</p> <p>Questions geo-engineering technology feasibility or timetable to being operational</p> <p>Questions safety and feasibility of nuclear power</p> <p>Champions renewables over other energy options to combat climate change</p> <p>Champions a fuel-mix but favors renewables</p>	<p>209</p> <p>Advocates for carbon capture and sequestration (CCS) as a technological solution</p> <p>Advocates for geo-engineering as a technological solution</p> <p>Champions tech-ready nuclear power as a technological solution</p> <p>Dismisses renewables as a viable energy solution compared with other options (e.g., nuclear, coal, etc.)</p> <p>Champions a fuel-mix but favors nuclear</p>
3. Economics				
	Frame	Code	Long Term	Short Term
10	Cost-benefit	110	<p>Highlights the methodological limits of cost-benefit analysis (e.g., cost-benefit is not able to capture all costs and benefits such as aesthetic value, well-being, externalities)</p> <p>Argues commensuration of natural resources is wrong (i.e., aesthetic value cannot be translated to monetary value)</p>	<p>210</p> <p>Says cost-benefit analysis adequately accounts for relevant economic variables and social/environmental externalities when evaluating climate change policy options</p> <p>Supports commensuration of natural resources (it's ok to monetize natural resources)—only code this if they're talking about using the earth's physical resources, not carbon (so this code does not apply to cap and trade articles necessarily)</p>
11	Economic investment (jobs and economy)	111	<p>Long-term economic benefits of addressing climate change will outweigh short-term costs</p> <p>Economic cost of not addressing climate change will be high</p> <p>Argues for the win-win scenario. Short-term benefits outweigh costs. GHG (greenhouse gas) controls will help the economy (local or national, more green jobs, make United States more competitive)</p>	<p>211</p> <p>Long-term costs of addressing climate change will outweigh long-term benefits</p> <p>Economic costs of not addressing climate change will not be high</p> <p>Argues for the lose-lose scenario. Short-term costs outweigh the benefits. GHG controls will cause economic harm to the economy (local or national, jobs lost to overseas workers)</p>

(continued)

Appendix (continued)

3. Economics						
Frame	Code	Long Term	Code	Short Term		
12	Economics of energy	Prognostic	112	Investing in renewable energy is profitable/good for economy now or in the near future Investing in nuclear, coal, or geo-engineering is not profitable now or in the future	212	Investing in renewable energy is not profitable or feasible now and will not be in the future Investing in nuclear, coal, or geo-engineering is profitable or feasible now and will be in the future
13	Discounting the future	Motivational	113	Says it is wrong to apply any (or a high) discount rate to future generations	213	Places higher discount rates on future generations (e.g., future generations will be wealthier, people today do not value people tomorrow as much)
4. Religion/Values						
Frame	Code	Stewardship	Code	Dominion		
14	Religion and science	Diagnostic	114	Climate change evidence, supported by scientific reason, is not at odds with religion	214	Scientific reason is hostile to religious faith (e.g., as evidenced by past clashes over intelligent design)
15	Free will and religion	Prognostic	115	Humans have free will to solve climate change so they should act	215	Places responsibility for care of the Earth in God's hands (i.e., humans are weak and cannot know God's will)
16	Education	Prognostic	116	Education is needed to teach/inform/inspire people to address climate change	216	Educational time and resources should not be expended on climate change
17	Civic responsibility	Prognostic	117	Individuals must take civic action (e.g., contacting legislators, protesting)	217	Deemphasizes need for civic action
18	Personal freedom	Prognostic	118	Argues limits on consumption and lifestyle choices are needed to address climate change (smaller houses, greening homes, more commuting, less consumption)	218	Argues that individuals should not have limitations placed on their consumption or lifestyle choices
19	Climate change is a moral issue	Motivational	119	Addressing climate change is a moral responsibility (e.g., stresses human rights, human welfare, animal rights, justice, and others)	219	Climate change is not a moral issue. It is a political issue. Addressing climate change means having to take progressive (i.e., immoral) stances on other social issues (e.g., contraception, GLBT [gay, lesbian, bisexual, transgender], women's rights)
				Stresses intergenerational equity. Stresses responsibility to all future generations		Stresses more responsibility to today's people and issues. Emphasizes End of Times or the Rapture
				Ecocentrism. Argues for human stewardship of the earth		Anthropocentrism: Argues for human dominion over earth

(continued)

Appendix (continued)

5. Political Ideology				
	Frame	Code	Liberal	Conservative
20	Freedom of speech	120	Climate proponents are squelched (e.g., in Bush administration)	Climate skeptics are squelched/freedom of speech should be honored
21	Media bias	121	Shows a conservative/too balanced bias on climate change	Media shows a liberal bias on climate change
22	Attacking opponents	122	Blames climate opponents for playing politics with climate change Big business puts forth climate denying and/or benefits from it Republicans benefit from climate denying	Blames climate supporters for playing politics with climate change Environmentalists/liberals/Al Gore/United Nations put forth climate hysteria and/or benefit from it Democrats benefit from climate hysteria
23	Government's role in regulating	123	Regulation Good Highlights the limitations of capitalism and free trade for addressing climate change (market alone cannot solve climate change) Supportive of government intervention in the market to regulate GHGs (e.g., carbon tax, cap and trade, stricter state laws or CAFE standards)—Legislation is good Regulation will create incentives that will positively change individual and organizational behavior	Regulation Bad Champions capitalism and free trade (market will solve climate change) Against government intervention in the market to regulate GHG emissions (opposes big government, government "programs," government running our lives) small government better Regulation will negatively change individual and organizational behavior
24	Cooperation	124	Prognostic Regulation will fix distortions in the market Regulation/incentives needed to spur new markets, promote clean tech, give renewables a leg up Embraces multi-lateral approaches to addressing climate change (e.g., Kyoto and Copenhagen) Stresses need for U.S. (by itself) to be a climate leader (we should go first)	Prognostic Regulation will cause distortions in the market If renewables are competitive, they should be able to make it on their own without government regulation picking winners Champions national sovereignty (we should not do it at all, should not be pressured by the EU) Expresses concern that U.S. climate leadership will give unfair advantage to developing countries (China and India). United States shouldn't act until they do

(continued)

Appendix (continued)

5. Political Ideology				
Frame	Code	Liberal	Code	Conservative
		Stresses need for developed countries (including United States) to take the lead on climate		Stresses need for developing countries to make binding GHG reduction commitments
		Bipartisanship (or collaboration more broadly) is necessary to solve this. This is an issue that matters to everyone		Republicans should continue to oppose climate change legislation or action
25	Nation-state responsibility	Motivational	125	Developed countries are at fault for historical emissions
			225	China and India are at fault for present-day emission levels. Expresses concern that developing countries aren't going to do enough to address climate change even if developed countries act
6. National Security				
Frame	Code	Interventionist	Code	Isolationist/Protectionist
26	Developing world problems	Diagnostic	126	Climate change will cause increase in environmental refugees or immigration to developed countries
				Climate change will cause instability in developing countries
27	Military strain	Diagnostic	127	U.S. military intervention in developing countries (or domestically, e.g., Katrina) will be necessary when climate change causes unrest (could stretch U.S. military too thin, cost too much)
			227	The United States will not have to involve itself with the problems in developing countries
28	Oil independence	Prognostic	128	United States should wean itself off foreign oil using domestic renewables
			228	United States should use its own fossil (coal, natural gas, etc.) and bio-fuels (ethanol) to wean the United States off foreign oil

(continued)

Appendix (continued)

6. National Security					
	Frame	Code	Interventionist	Code	Isolationist/Protectionist
29	National security/ foreign policy	129	Climate change is a national security issue so we should act Addressing climate change will enable United States to get off foreign oil (note difference from code 132) Addressing climate change will help United States avoid relying on extremist foreign regimes	229	Climate change is not a national security issue so we don't need to act Addressing climate change will not change the fact that we will need to import oil
			Addressing climate change will help United States avoid national security threats (e.g., in our interest to avoid unstable regimes developing)		Addressing climate change will not help the United States avoid national security threats (not in our interest)

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Notes

1. The author subscribes to this view, supported by most scientific institutions around the world, most recently the National Research Council (2010).
2. In line with drop in public opinion over this period recorded by the Pew Research Center (2009), 75% of articles were climate positive in 2007 and 2008 compared with 18% skeptical (the remaining articles being neutral or unclear), by 2009 the number of convinced articles drops to 66% and the skeptical articles increase to 23%.
3. Before proceeding, I would be remiss if I did not mention that there has been intense debate on both sides of the climate issue over whether the media presents climate change in a biased manner. Convinced advocates argue that the media has contributed to fostering skepticism among the public by presenting both the convinced and skeptical views, because they argue the climate denier view is a very marginal scientific view. Climate deniers, on the other hand, accuse media outlets of not giving their views enough exposure. Although an interesting topic for inquiry, questions about media bias do not drive this article. Rather, it views newspaper data as a convenient way to see expressed climate views by the public.
4. Beyond the National Academies, scientific consensus is based on the affirmations of climate change by the following scientific bodies: NASA's Goddard Institute of Space Studies, National Oceanic and Atmospheric Administration, Intergovernmental Panel on Climate Change, U.S. Environmental Protection Agency, American Geophysical Union, American Meteorological Society, American Institute of Physics, National Center for Atmospheric Research, State of the Canadian Cryosphere, Canadian Meteorological and Oceanographic Society, Academia Brasileira de Ciências Brazil, Académie des Sciences France, AccademiadeiLincei Italy, The Royal Society of the U.K., Royal Society of Canada, Deutsche Akademie der Naturforscher Leopoldina Germany, and the Science Council of Japan.

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