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

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Abstract

This paper analyzes the extent to which two institutional logics around climate change – the climate change "convinced" and 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 U.S. and a dataset of almost 800 op/eds from major news outlets over a two-year period to examine how convinced and skeptical arguments of opposing logics employ frames and issue categories to make arguments about climate change. This paper 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" frames (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

Introduction

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 activity was a major cause of greenhouse gas (GHG) emissions and that these emissions were influencing changes in the global climate.[1] Oreskes' (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 as solutions to address the issue. Many policy-makers, businesses, non-governmental 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 percent 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 treat this view as a dominant institutional logic. As "the belief systems that furnish guide-lines for practical action" (Rao, Monin and Durand. 2003: 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 and 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"[2] – or subscribes to them sinister motives and neglects their beliefs altogether (see McCright and Dunlap (2000) and (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 last three 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 emails among climate scientists at the University of East Anglia were released. Dubbed "climategate" by the media, climate deniers claimed the emails 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 and 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 percent among Americans between April 2008 and October 2009. While the Pew Center suggested that the decline may have been due to the severe economic recession that the U.S. 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 paper seeks to expand our understanding of the climate debate by examining it through the lens of cultural and institutional theories (Bazerman and Hoffman, 1999; Scott, 2001; Hulme, 2009; Hoffman, 2010). While 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 it 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 and Snow, 2000) and the concept of institutional logics (Friedland and Alford, 1991; Thornton and Ocasio, 1999) 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 paper, 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 and 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 like the Heartland Institute and conservative think tanks like the Cato Institute that produce research and white papers, 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, and Roser-Renouf, 2008).

Insert Figure 1 about here

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 U.S. and recent work on the denier movement by others (McCright and Dunlap, 2000, 2003; Oreskes and Conway, 2010).

Literature Review

Like all environmental issues, the issue of climate change is institutionally and culturally rooted (Bazerman and Hoffman, 1999; Hulme, 2009; Hoffman, 2010). While technological and economic activity may be the direct cause of GHG emissions, cultural norms and societal institutions guide the development of that activity (Bazerman and Hoffman, 1999) in a broad scope of institutional domains: scientific, political, social, and economic (Rosa and Dietz, 1998). But one central aspect of institutions is their resistance to change. In fact, inertia is a primary defining characteristic of institutions (Hannan and Freeman, 1977; DiMaggio and Powell, 1983, DiMaggio, 1995). 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 and Hirsch, 2005).

Recent and successful efforts by organizational researchers to move beyond institutional isomorphism and stability to explore the dynamics of such activities

(Greenwood and Hinings 1996; Emirbayer and Mische 1998; Creed, Scully, and Austin 2002) have led to an incorporation of social movement theories of mobilization and contestation to remedy the stability and inertia biases in the institutional literature (Rao, Morrill, and Zald, 2002; Rao, Monin and Durand, 2003; Davis, McAdam, Scott, and Zald, 2005; Rao and Giorgi, 2006; Weber, Heinze, and DeSoucey, 2008). Following this research direction, this paper 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 act as "important motors of institution-building, deinstitutionalization, and reinstitutionalization in organizational fields" (Rao, Monin and Durand, 2003: 796). This conception provides a bridge between institutional theory and social movement theory (Davis, McAdam, Scott and Zald, 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, Morrill, and Zald, 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: 43). These actions are often conducted in opposition to others in similarly

configured collective movements (Zald and Useem, 1987; Meyer and Staggenborg, 1996).

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 like the Heartland Institute, Cato Institute, Hoover Institute,

Competitive Enterprise Institute, and others. In the climate "believer" movement, there

are groups like 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 2010 occurred at the extremes of the debate. The percentage of respondents claiming

to be alarmed by climate change dropped from 18 to 10 percent and those in the

dismissive category increased from 7 to 16 percent (Leiserowitz, Maibach, and Roser-

Renouf 2010). 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 towards

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 and Ocasio, 2010: 825) and there are frequently competing logics battling for dominance within any given level (McAdam and 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: 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 and Ocasio 2010: 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 and Alford, 1991: 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: 210).

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 and 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 (Kahan, Jenkins-Smith and Braman, 2010; Rayner, 1992; Douglas and Wildavsky, 1982). 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, Heinze and DeSoucey, 2008).

Tightly linked to logics is the concept of cultural frames and framing processes. While "both refer to ideas and belief systems and recognize the role they play in providing direction, motivation, meaning and coherence" (McAdam and Scott, 2005: 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 and in particular, frames become particularly salient with groups that seek to challenge the dominant logics (McAdam and Scott, 2005). Cultural frames are critical for mobilizing a movement and they lend structure and organization to a set of specific practices (Swidler, 1986; Weber, Heinze and DeSoucey, 2008).

In this paper, I focus on three types of collective action frames that social movement organizations typically employ: diagnostic, prognostic, and motivational (Benford and 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 and 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 and Snow, 2000: 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 paper is that of the issue category. These are the empirical topics or subjects underpin the 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 paper. 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 paper 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" (Pielke 2007: 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 and 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.

Methods and Data

To analyze the current debate over climate change, data was 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 two-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 of 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 fieldnotes from the conference were recorded after each conference day ended. These source materials – along with work on the organized climate denier movement (Oreskes and Conway 2010; Dunlap and McCright, 2010; McCright and Dunlap, 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 non-relevant articles, the final dataset 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 over 30 percent of Americans in 2008 (Leiserowitz, Maibach, and Roser-Renouf, 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 sub-samples 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.

Within each of the seven issue categories, convinced and skeptical arguments were further coded as diagnostic, prognostic, or motivational frames (Benford and Snow, 2000). For example, statements like, "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. See Appendix 1 for the full coding key.

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 sub-samples of the data to discuss discrepancies and refine the code key, the coders' inter-rater 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 seventy climate denier presenters (and two climate believer speakers) over a two-day period with

an estimated audience of around 700 conference attendees. The theme of the conference was "Reconsidering the Science and Economics" and was co-sponsored 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 a 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 of 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 U.S. a call for totalitarianism in the US. 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 freedoms. 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-know 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 like cap and trade are just a way for big business to rent-seek. He used Exelon as an example of a utility that has a lot of nuclear so supports all climate legislation, because they 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. Oreskes and Conway, 2010, Dunlap and McCright, 2010) and find 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). Seventy-three percent of articles (N=578) were convinced and 20 percent were skeptical (N=155), in line with Pew Research Center findings that 71 percent of Americans believed there is solid evidence that the Earth is warming in 2008, and 21 percent did not believe while 8 percent were unsure (Pew Research Center, 2009).[3] 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.

Insert Table 1 about here

Convinced articles were found to be more likely presented through op/eds while the skeptical articles were presented more commonly through letters to the editor (see table 2). Just over 25 percent of convinced articles were letters to the editor, whereas almost 60 percent of skeptical articles were letters to the editor (chi-square $p \leq 0.001$).

Insert Table 2 about here

Whereas journalists wrote over 46 percent of convinced articles, they only authored 32 percent of skeptical articles as shown in Table 3 (chi-square $p \leq 0.01$). As a comparison, citizens authored over 55 percent of skeptical articles compared to 21 percent of convinced articles (chi-square $p \leq 0.001$).[4] 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 in venues other than newspaper editorials, but the degree to which their messages regularly reach lay audiences is unclear.

Insert Table 3 about here

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 percent of the articles reference it) are risk (chi-square $p \leq 0.001$) and political ideology (chi-square $p \leq 0.05$). The secondary categories of concern (more than 20 percent of articles mention it) are science (chi-square $p \leq 0.001$) and religion (chi-square $p \leq 0.001$). The latent or dormant category (less than 20 percent of articles mention it) is national security (chi-square $p \leq 0.001$). For the skeptical, the dominant categories are science (chi-square $p \leq 0.001$) and political ideology (chi-square $p \leq 0.05$), and the secondary issue category is risk (chi-square $p \leq 0.001$). Religion (chi-square $p \leq 0.001$) and national security (chi-square $p \leq 0.001$) are latent or dormant. Results for economics and technology were not significant.

Insert Table 4 about here

Not surprisingly, almost 90 percent 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 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 categories, 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 $p \leq 0.001$) while the motivational frame is not.

Insert Table 5 about here

Skeptical authors were fairly singular in their framing of the issue, with almost 95 percent 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 over 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. While 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 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.

Insert Table 6 about here

First, almost 60 percent of all skeptical articles in the political ideology category use a diagnostic frame (chi-square $p \leq 0.001$) to suggest that the science of climate change is politically motivated. Similar to the terminology of the climate denier movement, nearly 25 percent 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 of the skeptical articles showed that nearly 40 percent 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 $p \leq 0.001$), 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 it 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 actions for climate change under political ideology than convinced authors (due to their opposition to climate legislation), over 20 percent of skeptical ideology articles include prognostic frames (chi-square $p \leq 0.001$). 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 like 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 $p \leq 0.001$) 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 $p \leq 0.001$). 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 US 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 CO_2 emissions are where Waxman-Markey wants America's to be in 2050. Radical environmentalists think such a CO_2 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 paper 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 paper 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 and Snow, 2000: 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 upon 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 Wardekker, Petersen and van der Sluijs, 2009; Nerlich, 2010; Wilkinson, 2010), it was the convinced authors 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 paper discuss the scholarly and policy implications of this preliminary result.

Scholarly Implications.

In the institutional "field of struggles" (Bourdieu and 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, Monin and Durand, 2003, Suddaby and Greenwood 2005, Weber, Heinze and DeSoucey, 2008). This paper 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 importantly, this paper 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 paper 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. While existing research has studied the role of the media in framing climate science (i.e. Boykoff and Boykoff, 2007; Boykoff and Rajan, 2007), much less has been written to understand how climate denier arguments are presented. As the ultimate aim in this paper 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 paper'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 and 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, 2011). 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 and Conway 2010).

The call for more problem based research. This analysis has also sought to make a contribution toward producing problem-based research (Biggart and Lutzenhiser, 2007; Davis and 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 and Jennings, 2011) 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 and 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, 2011), even if our answers are not definitive.

Policy Implications

At the core of this paper 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. While anthropogenic climate change has

now reached the level of a scientific consensus (National Research Council, 2010)[5], 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 five percent of article authors. While 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.

Secondly, this paper highlights that social scientists, by neglecting the skeptical

logic, are neglecting a critical component of the social debate that is taking place. In

order 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); 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 paper'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 like 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, Hoffman, Thompson, Moore, Gillespie and Bazerman, 2002: 43). These beliefs can be deeply influenced by social movement politics like 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 towards 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 non-action, and the myriad ideological issues around personal freedom, the proper role and size of government, and others).

While 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 creative dismissive resistance to the argument. Instead, the issue must be presented in a manner that is culturally congenial to target audiences (Earle and Cvetkovich, 1995; Fisher and Shapiro, 2006; Kahan, Braman and 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 and Shapiro, 2006; Kahan, Jenkins-Smith and Braman, 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. Give that only 35% of Republicans believe there is solid evidence of global warming compared to 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 and Ocasio, 2001; Nigam and Ocasio, 2010).

A logic schism. While 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 and 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 mindset, joint solutions through cooperative decision-making become virtually impossible (Bazerman and 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

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This paper 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 like climate change. It is not enough to say the science is decided if the skepticism counter-movement 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 others and why some organizations support or resist efforts to mitigate GHG emissions (Hoffman, 2011).

If successful in spurring greater scholarly interest in the cultural, ideological and institutional elements undergirding the climate debate, research in this area – like 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, etc. 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.

References

Adam, D. 2010. "Scientists cleared of malpractice in UEA's hacked emails inquiry," *The Guardian*, April 14. http://www.guardian.co.uk/environment/2010/apr/14/oxburgh-uea-cleared-malpractice

Barton, J. 2009, "Democrats cap & trade plan: Sending us back to 1875," Press Release from the office of US Congressman Joe Barton, May 11, http://joebarton.house.gov/NewsRoom.aspx?FormMode=Detail&ID=486, viewed 10/13/10.

Bazerman, M. and Neale, M. 1992. *Negotiating Rationally.* New York: The Free Press

Bazerman, M. and A. Hoffman, 1999, "Sources of environmentally destructive behavior: Individual, organizational and institutional perspectives," *Research in Organizational Behavior,* 21: 39-79.

Benford, R. 1993, "You could be the hundredth monkey: Collective action frames and vocabularies of motive within the nuclear disarmament movement," *The Sociological Quarterly*, 34: 195-216.

Benford, R.D., and D.A. Snow. 2000. "Framing processes and social movements: An overview and assessment." *Annual Review of Sociology* 26:611-639.

Biggart, N.W., and L. Lutzenhiser. 2007. "Economic sociology and the social problem of energy efficiency." *American Behavioral Scientist* 50:1070-1086.

Blee, K. and K. Creasap. 2010, "Conservative and right-wing movements," *Annual Review of Sociology*, 36: 269–286.

Bolin, B. et al. 1995. *IPCC Second Assessment: Climate Change 1995. A Report of the Intergovernmental Panel on Climate Change*. New York: UN Intergovernmental Panel on Climate Change. http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf.

Booker, C. and R. North. 2009. "Questions over business deals of UN climate change guru Dr Rajendra Pachauri," *UK Telegraph*, December 20.

Bourdieu, P. and L. Wacquant. 1992. *Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.

Boykoff, M. and J. Boykoff. 2007 "Climate change and journalistic norms: A case-study of US mass-media coverage," *Geoforum*, 38 (6): 1190-1204.

Boykoff, M. and S. Rajan. 2007. "Signals and noise: Mass-media coverage of climate change in the USA and the UK," *EMBO Reports*, 8 (3): 207-211.

Creed, W., M. Scully, and J. Austin. 2002. "Clothes make the person: The tailoring of legitimating accounts and the social construction of identity," *Organization

Science, 13(5): 475-496.

Davis, G., D. McAdam, W. R. Scott, and M. Zald (Eds.). 2005. *Social Movements and Organization Theory*. New York: Cambridge University Press.

Davis, G.F., and C. Marquis. 2005. "Prospects for organization theory in the early twenty-first century: Institutional fields and mechanisms." *Organization Science* 16:332-344.

Derbyshire, D. 2009. "US belief in climate change is cooling fast," *The Mail*, October 24. http://www.dailymail.co.uk/news/worldnews/article-1222510/Poll-U-S-belief-global-warming-cooling-down.html#

DiMaggio, P. 1995. Comments on 'What theory is not.' *Administrative Science Quarterly*, 40: 391-397.

DiMaggio, P., and Powell, W. 1983. "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields." *American Sociological Review*, 48: 147-160.

Douglas, M. and A. Wildavsky. 1982. *Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers*, University of California Press.

Durkheim, É. [1895] 1982. *The rules of sociological method*, New York: Free Press.

Dunlap, R. and A. McCright. 2010. "Climate change denial: Sources, actors and strategies," in Lever-Tracy (ed.) *Routledge Handbook of Climate Change and Society* (London: Routledge): 240-259.

Earle, T. and G. Cvetkovich. 1995. *Social Trust: Toward a Cosmopolitan Society* Westport, CT: Praeger

Emirbayer, M. and A. Mische. 1998, "What is agency?" *American Journal of Sociology* 103: 962-1023.

Faraganis, J. 2004, *Readings in Social Theory: The classic tradition to post-modern*, New York: McGraw-Hill Higher Education.

Fisher, R. and D. Shapiro. 2006. *Beyond Reason: Using Emotions as You Negotiate*. New York: Penguin Books.

Fiss, P. and P. Hirsch. 2005. "The discourse of globalization: Framing and sensemaking of an emerging concept," *American Sociological Review*, 70: 29-52.

Friedland, R. and R. Alford. 1991. "Bringing society back in: Symbols, practices, and institutional contradictions," In *The New Institutionalism in Organizational Analysis*, edited by W. Powell and P. DiMaggio. Chicago: University of Chicago Press: 232-266.

Gamson, W. 1992, *Talking Politics*. Cambridge: Cambridge University Press.

Goodall, A. 2008. "Why have the leading journals in management (and other social

sciences) failed to respond to climate change?" *Journal of Management Inquiry*, 17(4): 408-420.

Greenwood, R., and Hinings, C. 1996. "Understanding radical organizational change: Bringing together the old and the new institutionalism." *Academy of Management Review*, 21(4): 1022-1054.

Guillen, M. 2006. *The Taylorized Beauty of the Mechanical: Scientific Management and the Rise of Modernist Architecture*. Princeton, NJ: Princeton University Press.

Hannan, M. and Freeman, J. 1977. "The population ecology of organizations." *American Journal of Sociology*, 82: 929-964.

Hoffman, A. 2010. "Climate change as a cultural and behavioral issue: Addressing barriers and implementing solutions," *Organizational Dynamics,* 39: 295-305.

Hoffman, A. 2011. "The culture and discourse of climate skepticism," *Strategic Organization. Forthcoming.*

Hoffman, A. and P.D. Jennings, 2011. "The BP oil spill as a cultural marker? Context, conflict and change," *Journal of Management Inquiry. Forthcoming.*

Hoffman, A. and W. Ocasio. 2001. "Not all events are attended equally: Toward a middle-range theory of industry attention to external events." *Organization Science,* 12: 414 - 434.

Hulme, M. 2009. *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge: Cambridge University Press.

Hulme, M. 2010, "The idea of climate change: Exploring complexity, plurality and opportunity," *Gaia*, 19(3): 171-174.

Inhofe, J. 2010, "Sneak peak into new Senate report on Climategate," Press Release from the office of US Senator James Inhofe, February 23, http://inhofe.senate.gov/public/index.cfm?FuseAction=PressRoom.PressReleases&ContentRecord_id=FAD156BB-802A-23AD-4222-D9CF2A803680, viewed 10/13/10.

Kahan, D., D. Braman and H. Jenkins-Smith. 2010 "Cultural cognition of scientific consensus," *Journal of Risk Research,* 1-28.

Kuhn, T. 1970, *The Structure of Scientific Revolutions* (Chicago Il: The University of Chicago Press).

Leiserowitz, A., E. Maibach, and C. Roser-Renouf. 2008. *Climate Change in the American Mind: Americans' Climate Change Beliefs, Attitudes, Policy Preferences, and Actions*. Yale Project on Climate Change http://www.climatechangecommunication.org/images/files/Climate_Change_in_the_American_Mind.pdf.

Lord, C., L. Ross and M. Lepper. 1979 "Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence," *Journal of Personality and Social Psychology*, 37 (11): 2098-2109.

McAdam, D., and W.R. Scott. 2005. "Organizations and movements," in D. McAdam and W.R. Scott, (eds.) *Social movements and organization theory*, New York: Cambridge University Press: 4-40.

McCormick, S. 2009. "From 'politico-scientists' to democratizing science movements: The changing climate of citizens and science." *Organization & Environment*, 22/1: 34-51.

McCright, A. and R. Dunlap. 2000. "Challenging global warming as a social problem: An analysis of the conservative movement's counter-claims," *Social Problems*, 47: 499-522.

McCright, A. and R. Dunlap. 2003. "Defeating Kyoto: The conservative movement's impact on U.S. climate change policy," *Social Problems*, 50: 348-373.

McCright, A. and R. Dunlap. 2010. "Anti-reflexivity: The American conservative movement's success in undermining climate science and policy," *Theory, Culture & Society*, 27(2-3): 100-133.

Meyer, D. and S. Staggenborg. 1996. "Movements, countermovements, and the structure of political opportunity." *American Journal of Sociology* 101:1628 - 1660.

Montopoli, B. 2010, "Bernie Sanders: Climate change skeptics like those who downplayed Nazism," *CBS News*, February 23, http://www.cbsnews.com/8301-503544_162-6236161-503544.html, viewed 10/13/10.

National Research Council 2010. *Limiting the Magnitude of Future Climate Change*, Washington DC: the National Academies Press.

Nerlich, B. 2010 "'Climategate': Paradoxical metaphors and political parties," *Environmental Values*, 19: 419-442.

Nigam, A. and W. Ocasio. 2010. "Event attention, environmental sensemaking, and change in institutional logics: An inductive analysis of the effects of public attention to Clinton's health care reform initiative," *Organization Science*, 21: 823-841.

Norgaard, K. 2006. "We don't really want to know: The information-deficit model, environmental justice and socially organized denial of global warming in Norway. *Organization & Environment*, 19(3): 347-370

Oreskes, N. 2004. "The scientific consensus on climate change," *Science* 306 (5702):1686.

Oreskes, N. and E. Conway. 2010. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues From Tobacco Smoke to Global Warming*, New York: Bloomsbury Press.

Painter, J. 2010. *Summoned by Science: Reporting Climate Change at Copenhagen and Beyond*, Oxford, UK: Rueters Institute for the Study of Journalism.

Parry, M., O. Canziani, J. Palutikof, P. van der Linden and C. Hanson (eds.) 2007. *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge, UK: Cambridge University Press.

Pew Research Center. 2009. *Fewer Americans See Solid Evidence of Global Warming: Modest Support for "Cap and Trade" Policy.* Washington, D.C.: Pew Research Center for the People and the Press. http://pewresearch.org/pubs/1386/cap-and-trade-global-warming-opinion.

Pielke, R. 2007. *The Honest Broker: Making Sense of Science in Policy and Politics*. Cambridge: Cambridge University Press.

Raiffa, H. 1985. *The Art and Science of Negotiation*, Boston, MA: Belknap Press.

Rao, H. and S. Giorgi. 2006. "Code breaking: How entrepreneurs exploit cultural logics to generate institutional change." *Research in Organizational Behavior,* 27: 279-314

Rao, H., C. Morrill, and M. Zald. 2002. "Power plays: How social movements and collective action create new organizational forms." *Research in Organizational Behavior* 22:239 - 282.

Rao, H., P. Monin, and R. Durand. 2003. "Institutional change in Toque Ville: Nouvelle cuisines an identity movement in French gastronomy." *American Journal of Sociology* 108:795 - 843.

Rosa, E. and T. Dietz. 1998. "Climate change and society: Speculation, construction and scientific investigation," *International Sociology*, 13(4): 421-455.

Rayner, S. 1992 "Cultural theory and risk analysis," In S. Krimsky and D. Golding (eds.) *Sociological Theories of Risk*, Westport, CT: Praeger: 83-115

Schrader-Freschette, K. 1997 "Elite folk science and environmentalism," *Organization & Environment*, 10/1: 23-25

Scott, W. R. 2001. *Institutions and organizations.* London: Sage Publications

Suddaby, R. and R. Greenwood. 2005. "Rhetorical strategies of legitimacy," *Administrative Science Quarterly*, 50: 35-67.

Swidler, A. 1986. "Culture in action: Symbols and Strategies," *American Sociological Review*, 51: 273-286.

Thornton, P. 2002. "The rise of the corporation in a craft industry: Conflict and conformity in institutional logics." *Academy of Management Journal*, 45: 81-101.

Thornton, P. and W. Ocasio. 2008. "Institutional logics," in R. Greenwood et al. (eds.), *The Sage Handbook of Organizational Institutionalism.* Los Angeles: Sage: 99-129

Tushman, M., and C. O'Reilly. 2007. "Research and relevance: Implications of Pasteur's quadrant for doctoral programs and faculty development." *Academy of Management Journal* 50:769-774.

Wade-Benzoni, K., A. Hoffman, L. Thompson, D. Moore, J. Gillespie and M. Bazerman. 2002. "Barriers to resolution in ideologically based negotiations: The role of values and institutions," *Academy of Management Review*, 27 (1): 41-57.

Wardekker, J., A. Petersen and J. van der Sluijs. 2009. "Ethics and public perception of climate change: Exploring the Christian voices in the US public debate," *Global Environmental Change*, 19: 512-521.

Weber, K., K. Heinze and M. DeSoucey. 2008. "Forage for thought: Mobilizing codes in the movement for grass-fed meat and dairy products," *Administrative Science Quarterly*, 53: 529-567.

Wilkinson, K. 2010. "Climate's salvation? Why and how American evangelicals are engaging with climate change," *Environment*, 52 (2): 47-57.

Zald, M. and B. Useem. 1987. "Movement and countermovement interaction: Mobilization, tactics, and state involvement." in *Social Movements in an Organizational Society*, edited by Mayer N. Zald and John D. McCarthy. New Brunswick, NJ: Transaction Publishers.

Zucker, L. 1983. "Organizations as institutions." In S. Bacharach (Ed.), *Research in the sociology of organizations*: 1-47. Greenwich, CT: JAI Press.

Table 1
Overall Article Position

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

Table 2
Article Type

	Convinced	**Skeptical**	**χ^2**	**p-value**
Letter to the Editor	28.37%	58.84%		
Not Letter to the Editor	71.63%	41.16%	38.16	0.000
Total	**100%**	**100%**		

Table 3
Author Credentials

	Total	Convinced	Skeptical	χ^2	p-value
Academic (non-scientist)	3.68%	3.98%	2.58%	0.67	0.412
Physical/Natural Scientist	4.64%	4.68%	4.52%	0.01	0.935
Journalist/Editorial Staff	43.38%	46.37%	32.26%	9.91	0.002
Elected Official	2.86%	3.29%	1.29%	1.75	0.186
Civil Servant non-elected	1.64%	2.08%	0%	3.27	0.070
Professional Researcher	1.36%	1.38%	1.29%	0.01	0.929
Citizen	28.24%	21.28%	54.19%	65.34	0.000
Corporate Executive	2.05%	1.29%	2.58%	0.28	0.597
Activist Representing a Formal Org	8.46%	10.55%	0.65%	15.50	0.000
Educator (non-college)	1.64%	2.08%	0%	3.27	0.070
Clergy	0.68%	0.87%	0%	1.35	0.245
NGO Representative	0.68%	0.87%	0%	1.35	0.245
Other	0.68%	0.69%	0.65%	0.00	0.950
Total	**100%**	**100%**	**100%**		

Table 4
Climate Change Convinced and Skeptical Articles
by Issue Category *

	Convinced	Skeptical	χ^2	p-value
Science	36.85%	87.74%	126.91	0.000
Risk	62.11%	34.19%	38.70	0.000
Technology	9.69%	5.16%	3.14	0.076
Economics	24.22%	21.29%	0.58	0.445
Religion	35.12%	5.81%	51.09	0.000
Political Ideology	59.00%	67.74%	3.92	0.048
National Security	11.07%	1.29%	14.28	0.000

* Percent of articles that use a category type one or more times

Table 5
Climate Change Convinced and Skeptical Articles
By Frame Type *

	Convinced	Skeptical	χ^2	p-value
Diagnostic Frame	60.38%	94.19%	63.73	0.000
Prognostic Frame	80.45%	40.65%	96.13	0.000
Motivational Frame	50.87%	42.58%	3.36	0.067

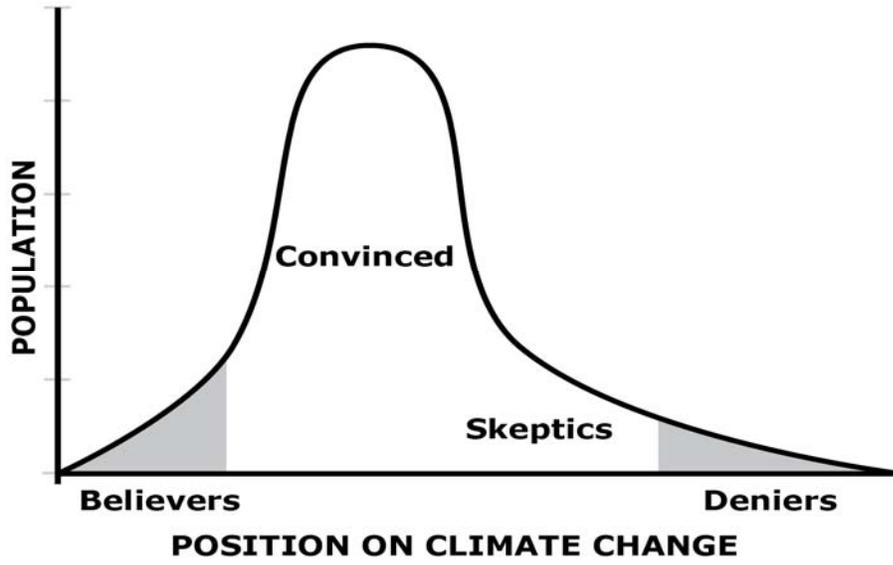* Percent of articles that use a frame type one or more times

Table 6
Climate Change Convinced and Climate Skeptical Articles
by Issue Category and Frame Type *

	Diagnostic Frame				*Prognostic Frame*				*Motivational Frame*			
	Convinced	Skeptical	χ^2	p-value	Convinced	Skeptical	χ^2	p-value	Convinced	Skeptical	χ^2	p-value
Science	36.85%	87.74%	126.91	0.000	0%	7.74%	45.49	0.000	2.42%	12.26%	27.50	0.000
Risk	39.97%	9.68%	50.29	0.000	37.54%	9.68%	43.87	0.000	12.63%	24.52%	13.44	0.000
Technology	0%	0%	--	--	9.69%	5.16%	3.14	0.076	0%	0%	--	--
Economics	0.87%	0.65%	0.07	0.787	5.19%	3.87%	0.46	0.500	21.28%	20.65%	0.03	0.863
Religion	0%	0%	--	--	19.72%	5.81%	16.95	0.000	22.32%	0%	41.98	0.000
Political Ideology	23.53%	58.06%	68.35	0.000	45.85%	22.58%	27.37	0.000	5.02%	0.65%	5.95	0.015
National Security	3.81%	0%	6.08	0.014	1.90%	0.65%	1.20	0.273	6.75%	0.65%	8.82	0.003

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

Figure 1

A Stylized Distribution of American Public Positions on Climate Change

Appendix 1
Newspaper Op/Ed Coding Scheme

		Frame	CODE	0. Science — *Certainty*	CODE	0. Science — *Uncertainty*
1	**SCIENTIFIC CERTAINTY**	**Diagnostic**	**101**	Says the consensus **process** by which IPCC 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") Skeptics have the science wrong Consensus exists	**201**	Says the IPCC process for determining the scientific evidence around climate change is flawed Stresses uncertainty of climate evidence/climate models Denies climate evidence entirely (cc a myth, hoax). Cites support for global cooling Believers have the science wrong Consensus doesn't exist
2	**CAUSES** of climate change	**Diagnostic**	**102**	Climate change is caused by humans (e.g. by combusting fossil fuels, consumption, etc)	**202**	Climate change is not caused by humans or is caused by natural forces
3	More **RESEARCH** Needed	**Prognostic**	**103**	No more research is needed	**203**	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)

		Frame	CODE	1. Risk — *High*	CODE	1. Risk — *Low*
5	Precautionary Principle **(also URGENCY and ACT NOW!)**	**Prognostic**	**105**	Argues for the Precautionary Principle; it is better to be safe than sorry Regardless of evidence for or against cc, it is prudent to take action (we should do something) What does it hurt to act? We need to act now! Action needed now to solve this urgent problem.	**205**	Argues that we have time to wait for more scientific clarity before actions are needed Since there are questions about the evidence on climate change, the risk isn't great enough to act No need to act now. No need to act now.
6	**PHYSICAL RISKS**	**Diagnostic**	**106**	Physical risks are/will be real and present (e.g. hurricanes, droughts, melting ice, species extinction, biodiversity loss)	**306**	Physical risks are exaggerated, hyped and overplayed, or only apply to others (i.e. developed countries)
7	**PUBLIC HEALTH RISKS**	**Diagnostic**	**107**	Health or social risks are/will be real and present (e.g. disease, public health disasters)	**207**	Health risks are exaggerated, hyped and overplayed, or only apply to others (i.e. developed countries)
8	**EXTERNALITIES**	**Motivational**	**108**	Addressing climate change will cause positive social externalities (e.g. public health benefits)	**208**	Addressing climate change will cause negative externalities (e.g. poorer quality of life)

#	Category	Type	Low code	Low	High code	High
				Addressing climate change will help us avoid terrible consequences from social or physical risks listed above (we must act)		Addressing climate change will not affect our ability to deal with social or physical risks
				Addressing climate change will cause positive environmental externalities (cleaner air, better enviornment, etc.)		Not addressing climate change will cause positive externalities (longer growing seasons, milder winters, better quality of life)

2. Technology

#	Category	Type	code	*Low*	code	*High*
9	Type of Technology (**PICKING WINNERS**)	**Prognostic**	**109**	Questions Carbon Capture and Sequestration (CCS) technology feasibility or timetable to being operational	**209**	Advocates for carbon capture and sequestration (CCS) as a technological solution
				Questions geo-engineering technology feasibility or timetable to being operational		Advocates for geo-engineering as a technological solution
				Questions safety and feasibility of nuclear power		Champions tech-ready nuclear power as a technological soulution
				Champions renewables over other energy options to combat climate change		Dismisses renewables as a viable energy solution compared to other options (e.g. nuclear, coal, etc)
				Champions a fuel mix but favors renewables		Champions a fuel mix but favors nuclear

3. Economics

#	Category	Type	code	*Long-term*	code	*Short-term*
10	**COST-BENEFIT**	**Diagnostic**	**110**	Highlights the methodological limits of cost-benefit analysis (e.g. cb is not able to capture all costs and benefits such as aesthetic value, well-being, externalities)	**210**	Says cost-benefit analysis adequately accounts for relevant economic variables and social/environ externalities when evaluating cc policy options
				Argues commensuration of natural resources is wrong (i.e. aesthetic value cannot be translated to monetary value)		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)
11	Economic Investment (**JOBS AND ECONOMY**)	**Motivational**	**111**	Long-term economic benefits of addressing cc will outweigh short-terms costs	**211**	Long-term costs of addressing cc will outweigh long-term benefits
				Economic cost of NOT addressing climate change will be high		Economic costs of NOT addressing climate change will NOT be high
				Argues for the win-win scenario. Short term benefits outweigh costs. GHG controls will help the economy (local or national, more **GREEN JOBS**, make US more competitive)		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).
12	Economics of **ENERGY**	**Prognostic**	**112**	Investing in renewable energy is **PROFITABLE/GOOD FOR ECONOMY** now or in the near future.	**212**	Investing in renewable energy is not profitable or feasible now and will not be in the future

#	Topic	Type		Stewardship		Dominion
				Investing in nuclear, coal, or geo-eng is not profitable now or in the future		Investing in nuclear, coal, or geo-eng 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						
				Stewardship		*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 cc (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) Stresses Intergenerational Equity. Stresses responsibility to all future generations Ecocentrism. Argues for Human Stewardship of the Earth.	**219**	Climate change is not a moral issue. It is a political issue. Addressing cc means having to take progressive (i.e. immoral) stances on other social issues (e.g. contraception, GLBT, women's rights Stresses more responsibliity to today's people and issues. Emphasizes End of Times or the Rapture Anthropocentrism: Argues for Human Dominion over Earth

5. Political Ideology						
				Liberal		*Conservative*
20	Freedom of **SPEECH**	**Diagnostic**	**120**	Climate proponents are squelched (e.g. in Bush Administration)	**220**	Climate skeptics are squelched/freedom of speech should be honored
21	**MEDIA** Bias	**Diagnostic**	**121**	Shows a conservative/too balanced bias on cc	**221**	Media shows a liberal bias on cc
22	**ATTACKING OPPONENTS**	**Diagnostic**	**122**	Blames climate opponents for playing politics with climate change. Big business puts forth climate denying and/or benefits from it	**222**	Blames climate supporters for playing politics with climate change. Environmentalists/liberals/Al Gore/United Nations put forth climate hysteria and/or benefit from it

				Republicans benefit from climate denying.		Democrats benefit from climate hysteria.
23	Government's **ROLE IN REGULATING**	**Prognostic**	**123**	**REGULATION GOOD**	**223**	**REGULATION BAD**
				Highlights the limitations of capitalism and free trade for addressing cc (market alone cannot solve cc)		Champions capitalism and free trade (market will solve cc)
				Supportive of government intervention in the market to regulate GHGs (e.g. carbon tax, cap and trade, stricter state laws or CAFÉ standards) **- LEGISLATION IS GOOD**		Against gov't intervention in the market to regulate GHG emissions (opposes big gov't, gov't "programs," gov't running our lives) **SMALL GOV'T better**
				Regulation will create incentives that will positively change individual and org behavior.		Regulation will negatively change individual and org behavior.
				Regulation will fix distortions in the market.		Regulation will cause distortions in the market.
				Regulation/incentives needed to spur new markets, promote clean tech, give renewables a leg up.		If renewables are competitive, they should be abe to make it on their own w/out gov't regulation picking winners.
24	**COOPERATION**	**Prognostic**	**124**	Embraces multi-lateral approaches to addressing cc (e.g. Kyoto and Copenhagen).	**224**	Champions national sovereignty (we should not do it at all, should not be pressured by the EU).
				Stresses need for U.S. (by itself) to be a climate leader (we should go first).		Expresses concern that U.S. climate leadership will give unfair advantage to developing countries (China and India). **U.S. shouldn't act until they do.**
				Stresses need for developed countries (including U.S.) 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 cc even if developed countries act.
				6. National Security		
				Interventionist		*Isolationist/Protectionist*
26	**DEVELOPING WORLD** Problems	**Diagnostic**	**126**	Climate change will cause increase in environmental refuges or immigration to developed countries	**226**	The United States will not be affected by environmental refuges b/c of distance from affected areas, immigration laws, or other regulations meant to limit immigration
				Climate change will cause instability in developing countries		Climate change will not 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 US 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	U.S. SHOULD wean itself off foreign oil using domestic renewables	228	U.S. should use its own fossil (coal, natural gas, etc.) and bio-fuels (ethanol) to wean the U.S. off foreign oil
29	NATIONAL SECURITY/ FOREIGN POLICY	Motivational	129	Climate change is a national security issue so we should act	229	Climate change is not a national security issue so we don't need to act.
				Addressing climate change will enable US to get off foreign oil (**note difference from code 132**)		
				Addressing climate change will help U.S. avoid relying on extremist foreign regimes		Addressing climate change will not change the fact that we will need to import oil
				Addressing climate change will help U.S. avoid national security threats (e.g. in our interest to avoid unstable regimes developing)		Addressing climate change will not help the U.S. avoid national security threats (not in our interest)

Notes:

[1] The author subscribes to this view, supported by most scientific institutions around the world, most recently the National Research Council (2010).

[2] For the remainder of this paper, I will use the term "denier" rather than skeptic to describe the active social movement members as it best describes a category of constituents who do not believe that climate change is happening, as opposed to just being doubtful.

[3] In line with drop in public opinion over this period recorded by the Pew Research Center (2009), 75 percent of articles were climate positive in 2007 and 2008 compared to 18 percent skeptical (the remaining articles being neutral or unclear), by 2009 the number of convinced articles drops to 66 percent and the skeptical articles increase to 23 percent.

[4] 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. While an interesting topic for inquiry, questions about media bias do not drive this paper. Rather, it views newspaper data as a convenient way to see expressed climate views by the public.

[5] 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, US 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 Brasiliera de Ciências Brazil, Academié des Sciences France, Accademia dei Lincei Italy, The Royal Society of the UK, Royal Society of Canada, Deutsche Akademie der Naturforscher Leopoldina Germany, and the Science Council of Japan.