THE CONTROVERSY OVER CLIMATE CHANGE IN THE PUBLIC SPHERE

by

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(Under the Direction of Edward Panetta)

ABSTRACT

The scientific consensus on climate change is not recognized by the public. This is due to many related factors, including the Bush administration's science policy, the reporting of the controversy by the media, the public's understanding of science as dissent, and the differing standards of argumentation in science and the public sphere. Al Gore's An Inconvenient Truth was produced in part as a response to the acceptance of climate dissent by the Bush administration and achieved a rupture of the public sphere by bringing the technical issue forward for public deliberation. The rupture has been sustained by dissenters through the use of argument strategies designed to foster controversy at the expense of deliberation. This makes it incumbent upon rhetorical scholars to theorize the closure of controversy and policymakers to recognize that science will not always have the answers.

INDEX WORDS: Al Gore, Argument fields, Argumentation, An Inconvenient Truth, Climate change, Climategate, Controversy, Public sphere, Technical sphere

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Chapter One: The Public and the Controversy

I. Introduction to the Study

With the dissolution of the Soviet Union and the drawdown of that nuclear threat, one issue represents an existential threat to human and non-human life. Drastic climate change could turn the Earth into a desolate lifeless planet[1], and even conservative estimates predict that we are likely to see rising sea levels, weather unpredictability, and temperature increases around the globe.[2] These effects of climate change are likely to decrease agricultural output, displace populations, and severely impact trade and economic growth around the world.[3] Communicating the threat that climate change represents is complicated by the presence of an ongoing controversy over the status of the science of climate change, effectively preventing policymakers from moving forward on the issue.

Despite the scientific nature of climate change, there are diverse views expressed by a wide array of individuals in the public sphere. Most notably, Al Gore's film An Inconvenient Truth explicitly attempts to persuade the public that there is a scientific consensus that climate change is human-induced. A number of celebrities have also brought their opinion about climate change to the public. In 2006 Brad Pitt, Keanu Reeves, Alanis Morrissette, and Leonardo DiCaprio all narrated videos that support action to stop climate change.[4] Scarlett Johansson and David Attenborough have become involved by signing a letter drafted by Oxfam that urges the

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[1] Brandenburg and Paxson 1999
[2] EPA 2009
[3] Milbrath 1994
[4] Vergano 2006

United Nations to take action on climate change.[5] These celebrities are speaking out in the public sphere about what seems to be a scientific issue, a technical debate. The perceived necessities of the interventions into the public sphere on a settled technical debate are what this project concerns itself with. This project will progress through five chapters. This first chapter provides an explanation of the intended audiences for this study, its area of inquiry, scope and limits. Namely, the focus on the controversy over climate change science as it is currently presented to the American public. This chapter reviews the major source material including general controversy and argumentation theory and specific literature about the climate change controversy. The review includes an analysis and assessment of the general importance of each piece as it relates to the overall project. It also includes a detailed introduction of the next four chapters.

There are two audiences that may find this project useful in their scholarly and political life. The primary audience are rhetorical theorists and critics who find that they have an interest in science policy controversies specifically, or argumentation and controversy theory more generally. For this audience this project can inform future research on the subject by locating common characteristics of scientific dissent and its public representation. By tracing the evolution of argument strategies that are commonly used in presenting scientific dissent to the public, this project provides a template for assessing future science policy controversies.

The secondary audience consists of the rhetorical practitioners whose argumentation is the subject of this project. For public policy policymakers, commentators and scientists seeking to relate scientific information to the public this project provides a useful foundation for crafting effective messages. For these groups, understanding the effective presence of their

[5] Gray 2008

argumentation and its interplay with other controversies should help them craft a more cohesive argument strategy.

Chapter two locates a point of public rupture in the controversy over climate science. It investigates Al Gore's documentary An Inconvenient Truth arguing that the film's release occurred at the apex of institutional support for dissent.[6] Additionally, the historically favored medium, photography, failed to sufficiently arouse the public's interest in supporting regulatory reform and so a more compelling medium was needed. An examination follows of the dissenters' reaction to the film, including the creation of a counter-video, Glen Beck's Exposed: Climate of Fear, and two principles of dissent that this reaction illustrates. First, scientific dissenters engage in strategies that reflect both the form and content of the consensus material. Second, scientific dissenters specifically wish to incorporate their discourse into a general deliberative process as a way to sustain debate rather than seek closure.

Chapter three is concerned with how an uncontroversial issue in science becomes controversial in the eyes of the public. This chapter discusses the different standards of justification between scientific argument and public argument and highlights the ways that these differing standards impact the public perception of the controversy. The chapter points to the public understanding of science as a monolith and the ways that the dissenters encourage that perception as significantly altering public understanding of the controversy. This analysis includes how climate dissenters mirror their opponents' argumentative strategies and forms to access the understood legitimacy surrounding science. The chapter includes a discussion of the dissenters' arguments in print, news, and online as well as the journalistic training that emphasizes constructing a balanced narrative in reporting a controversy. Lastly, chapter three

[6] Dissent and the dissenters are understood here as the individuals and groups which reject the conclusions of the IPCC assessment reports on climate change. At the time, the Bush administration supported this perspective. See Panetta 2007.

highlights the public's reliance on new electronic mediums as it pertains to the perception of scientific dissent.

Chapter four builds on the explanation of dissenter's mirroring tactics, describing two argumentative practices that define science in a manner supporting climate dissent. Both strategies rely on taking a familiar scientific story or argument and using it to affirm the dissenter opinion. First the retelling of a story commonly used to demarcate science from religion, the legend of Galileo, is done by the dissenters specifically to support skepticism against consensus in science. Second, the treatment of arguments about climate dissent being related to Intelligent Design Theory (IDT) as unscientific or pseudoscientific demarcates climate dissent from other IDT, while associating climate science with the theory. Both examples rely on the necessity for science to demarcate itself from other communities with a claim to epistemic authority, including religion.

Chapter five offers some conclusions that should be of interest to both the primary and secondary audiences of this project. For the primary audience, there is an analysis of the impact of this project on argumentation theory and its relationship to theories of controversy. Specifically, the idea that arguments are used to close off controversy is questioned, as is the primary purpose of scientific dissent as this type of argument. The concluding chapter includes an analysis of the effect that public sphere theory and its call for deliberation has been perversely used to justify perpetual controversy. This has created the situation that characterizes the fourth era of science policy controversy, the support of dissident scientists by powerful economic interests. For the secondary audience, the earlier analysis of the role of science and policymakers in shaping this controversy is more deeply explored. Specifically, the perception of science as a source of epistemic certainty has shaped its role in public deliberation as the final word in a

controversy. In the event that there is disagreement in science, public policy makers can simply write off science as a viable contributor to the public dialogue.

II. Area of Inquiry

The area of inquiry for this project is the ongoing public controversy over the science of climate change. In his keynote address to the 1991 Alta Conference on Argumentation, G. Thomas Goodnight outlines four features of a controversy. First, it occurs between two or more entities on opposing sides. Second, the duration of a controversy is indeterminate. Third, "controversy pushes the limits of the available means of communication."[7] Fourth, controversy "expands cultural, social, historical, and intellectual arguments."[8] In discussing the nature of the climate change controversy, these four features are particularly relevant when addressing the specific question for this project. Namely how do the different materials that shape the public's opinion about climate change work to transform a lack of scientific controversy into a public one? The objectives in achieving a purposeful examination of this question are first to identify materials that shape a public understanding of the controversy, and second to trace the impact on the evolution of the public controversy.

The term "public," is here meant to represent the American citizenry that are capable of and willing to voice an opinion about the status of climate change. It is necessary to limit the discussion to the American public because it is the audience associated with public policy change on this issue. In this case, the public consumes a wide array of materials related to climate change with diverse age groups exhibiting differing levels of trust in different media and sources.[9] The examination of the controversy revolves around the existence of two heterogeneous camps that have organized in support or opposition to the principle document on

[7] Goodnight 1991, page 2
[8] Ibid.
[9] Feldman et al. 2010

climate change, the Intergovernmental Panel on Climate Change (IPCC) assessment report. The IPCC was established by the United Nations Environment Programme, and the World Meteorological Organization. It is composed of scientists from around the world who voluntarily contribute their work to crafting a global body of work on climate change. These studies and the conclusions of their authors are then compiled and released as assessment reports. The IPCC assessment report is the largest and most visible document on climate change around, so much of the controversy centers on the scientific basis for the document and the policy recommendations that it sets out. The dissenters are the scientists and non-scientists who reject the conclusions of the panel. The assenters are scientists and non-scientists who accept the conclusions of the panel. Using the language of "dissent" and "assent" are superior for this project as alternative terms like "skeptic," "denier," or "contrarian," on the one side or "alarmist," "cultist," or "consensus," on the other are in part connected to the very argumentative structures and assumptions on which this project hopes to shed light.

This project begins with a point of rupture in the controversy that is produced with the release of Gore's An Inconvenient Truth. Initially the content of the documentary is analyzed as it relates to the overall evolution of this science controversy, including how the film creates a thematic link to the tobacco controversy which shared some similar characteristics with the contemporary climate controversy. Chronologically, the release of the film also coincides with a number of features of a controversy coming to a head. The Bush administration had been accused of silencing the top climate scientist at NASA, James Hansen[10], after he made statements contradicting the established policy of the administration. This and other examples of the politicization of science may have served as an impetus for the film. A prevalent form of argumentation that is employed by dissenters is to use a mirroring strategy, and that was

[10] Revkin 2006

employed in the case of the Gore film. Glen Beck, the host of a Fox News show, created a video response to the film, in which he incorporates scenes from the film and also brings in interviews with experts of his own. The mirroring strategy is also used effectively in other forums where the dissenters represent themselves as a part of the scientific community to the public at large. The dissenters surround themselves with all of the trappings of science so that they may gain access to the historical legitimacy that is accorded to the scientific community. This includes emulating the assenter groups' practices across the board, from the design of their webpages, to holding conferences, to the creation of an alternative panel, the Nongovernmental International Panel on Climate Change (NIPCC). The narrative that the dissenters relay to their scientific colleagues is also one of identification and commonality. They point to a common ancestor in Galileo, a persecuted scientist who was skeptical of the earth-centric model of the universe. They also identify a common enemy by pointing to the defenders of intelligent design as being anti-scientific as a way to demarcate themselves from other pseudo-scientific practices. By using a strategy of incorporation and identification, the dissenters hope to refigure the controversy so that it takes place almost entirely on their ground.

Charting the dynamic nature of this controversy should illuminate the contours of a public dialogue with a global character. The investigation of this controversy will not merely provide commentary on the micro-movements in the debate between those aligned with the report of the IPCC and the dissenters. Rather, this project will contribute to a developing body of theory describing the relationship between technical argumentation and how the public understands that argumentation, especially as it is processed through new forms of media and technology. As the target of much of the argumentation for and against the IPCC, the American public's assimilation and response to this controversy provides an important template to predict

how future controversies over science may progress. Because of this orientation towards the public it is necessary to evaluate research on how and why certain arguments and strategies come to be salient in the collective understanding of this controversy. Though there is no direct analysis of international audiences and their response to this controversy, the lessons learned from an engagement with the American public may be applicable in international settings regarding other similar controversies.

As an active controversy, the public's perception of the uncertainty of climate change science remains a roadblock to policymakers. Conveying information to the public in a way that is accessible, accurate, and persuasive is a challenge that has yet to be met. This project alone does not hope to address all facets of this problem, but rather contribute to the ongoing work that is being done to correct the misperception. Though the dialogue over climate change in the United States has a nationalist character, the implications of inaction should not be underestimated. In 2008, the United States accounted for around 20 percent of the total global carbon dioxide emissions, the largest contributor in the world. Though other countries will surpass the United States in emissions in the future the static rate of emissions is significant, projected to comprise 15 percent of global emissions in 2030.[11] According to the Environmental Protection Agency, greenhouse emissions could cause rising sea levels, climate variability, and temperature increases around the globe.[12] Providing an analysis of the controversy and the materials that shape the frame of reference with which the public approaches the issue would allow a better understanding of why this is the case, as well as provide a basis for improvement. It is important to note there is little controversy in the peer-reviewed literature of the scientific

[11] U.S. EIA, 2009
[12] EPA, 2009

community about the anthropogenic character of at least some warming.[13] This consensus is not however reflected in the public perception of the science of climate change, with 52% of Americans believing that there is significant disagreement in the scientific community over the causes of climate change.[14] The gap between established scientific data and public opinion represents a vast area of improvement for making scientific communication more effective.

III. Review of Source Material

The material that is drawn upon has two main orientations, with some interplay between them. First, there are studies that seek to describe the divergence of opinion between the American public and the assenter scientist on climate change or deal with science's relationship to public discourse more generally. Second, there are studies that focus their efforts on describing the ins and outs of controversy theory or argumentation theory. Though both are important to the examination of the controversy, the outline here only briefly concerns the specific sources, saving a more lengthy examination of them for later chapters. After this brief outline, there is a deeper explanation of how the foundational texts shape the inquiry.

The first two sources cited deal with the use of photography by climate change assenters as a mobilizing medium. In "Imaging Nature: Watkins, Yosemite, and the Birth of Environmentalism" Kevin Deluca and Anne Demo argue that the creation of Yosemite National Park as well as the birth of the environmental movement in the United States was in part due to the influence of visual imagery.[15] They argue that the pictures of Yosemite produced by Carleton Watkins constitute "the context within which a politics takes place—they are creating a reality."[16] In "Seeing the Climate?" Julie Doyle argues that photographic evidence of climate

[13] Oreskes 2004
[14] Rasmussen Reports 2009
[15] Deluca and Demo 2000
[16] Deluca and Demo 2000, page 242

change is self-defeating, as it represents the failure of preventative efforts to achieve success.[17] Photos of glaciers disappearing do not constitute a context that encourages reform, as they seem to demonstrate that it is too late to act.

Next, it is important to acknowledge work that has preceded this study that takes as its starting point the divergence of public and scientific understanding of climate change. In "Obscuring the Facts: The Bush Administration and the Politicization of Science in the Greenhouse Debate," E. Panetta argues that the Bush administration's position on climate change was one that amplified the minority opinion to present a debate that was non-existent in the scientific community.[18] For Panetta, the tendency of the media to sensationalize controversy and over-report disagreement also leads to public confusion about climate change. The next two sources deal specifically with how the public interprets scientific communication. D. Nelkin in "Beyond Risk: reporting about genetics in the post-Asilomar press" indicates that the public's understanding of science is largely colored by how the media reports on it.[19] In "Communicating Climate Change: Why Frames Matter to Public Engagement," M.C. Nisbet explains that the key to legislative success on climate lies in overcoming public opposition to and misunderstanding of climate science.[20]

The media's understanding of science is in turn influenced by science's narrative about its own history and assumptions. In telling its stories, science engages in demarcation strategies or boundary work that sets science apart from other fields in order to provide science with the moral and epistemological high-ground. In Defining Science: A Rhetoric of Demarcation C.A. Taylor argues that science's strategies of demarcating itself from other disciplines are not wholly

[17] Doyle 2009
[18] Panetta 2007
[19] Nelkin 2001
[20] Nisbet 2009

unified or one-sided in their presentation. Rather, boundary work in science occurs in response to a perceived need to create these boundaries and happens against the background of the opposing practices. This is apparent in the negotiation of the meaning of Galileo's story for climate change dissent as it is presented differently by different groups. In "The Galileo Legend as Scientific Folklore" T. Lessl explains the usefulness of telling a Galileo narrative in demarcating science from religion and establishing the moral and epistemological purity of science.[21] Demarcating science from religion and other non-scientific pursuits is important to provide science and scientists a unique identity and ethical superiority. Additionally, the demarcation strategies used by parties in one science controversy may have rhetorical presence in the arguments and demarcation strategies for parties of other controversies. In Lessl's "Scientific Demarcation and Metascience: The National Academy of Sciences on Greenhouse Warming and Evolution" he argues that the statements about evolution that the NAS uses to demarcate itself from religious discourse include a preference for a high degree of certainty and empiricism.[22] This method of demarcation spills over into the climate change controversy as it establishes certainty as a baseline for scientific epistemology, justifying an examination of climate science from this perspective. Richard Lindzen, a prominent dissenter and professor of physics at MIT, is charged with defending climate dissent from accusations that like Intelligent Design Theory (IDT) it is unscientific. He does so by first dissociating climate dissent from IDT and then associating climate models with IDT.[23]

In addition to the specific texts dealing with various facets of this project, there are also significant foundational texts that this project works with and that shape the examination of the argumentative practices in play. C. Perelman and L. Olbrechts-Tyteca's The New Rhetoric

[21] Lessl 1999
[22] Lessl 2008
[23] Lindzen 2009

provides an analysis of fundamental argumentation principles, such as an understanding of skepticism as it relates to argumentation. The New Rhetoric is also useful for explaining some rhetorical strategies of the dissenters, including the use of dissociation and association as a tool in encountering other science dissents in Intelligent Design Theory. S. Toulmin's The Uses of Argument outlines a theory of argument fields that is useful in examining how dissenter argumentation operates differently than assenter argumentation. Although field theory has been criticized as not applying in all situations, it provides a useful conceptual distinction here. G. Thomas Goodnight's texts establish the basis for controversy theory and its relationship to argumentation in the public sphere. His description of the technical and public sphere and how argumentation migrates from the technical sphere into the public sphere forms the foundation of the analysis of An Inconvenient Truth. These sources and other argumentation and controversy literature that builds on their principles serve a useful ground upon which to locate a thoughtful consideration of this controversy.

In The New Rhetoric: A Treatise on Argumentation[24] Perelman and Olbrechts-Tyteca are concerned with producing a rhetorical theory that enriches the traditional philosophical understanding of argument as strictly logos. For them, argument is concerned with "the discursive techniques allowing us to induce or to increase the mind's adherence to the theses presented, for its assent."[25] For them and many others since, the realm of argumentation and deliberation is the probable and not the necessary. Skepticism can still arise when "equating adherence to a thesis with recognition of its absolute truth"[26] is the condition of acceptance for an argument. This describes the overarching argument strategy of climate change dissenters; deny everything that isn't demonstrated as absolute truth. It is not that climate change dissenters

[24] Perelman and Olbrechts-Tyteca 1969
[25] Perelman and Olbrechts-Tyteca 1969, page 4
[26] Ibid, page 62

confuse the needed justification for deliberative argument with that of philosophical argument. Quite the contrary in fact, climate change dissenters understand that argumentation is audience centered and moreover that science both as an audience and generator of argument is uniquely vulnerable to tests of certainty. For Perelman and Olbrechts-Tyteca, skepticism refuses to accept that the purpose of argumentation is to propose and justify a choice among competing theses, and to do so in a way that preserves rationality.

Through The New Rhetoric, Perelman and Olbrechts-Tyteca provide a basic description of argumentation and its relationship to skepticism that is enriched and expanded by Toulmin's concept of argument fields. In The Uses of Argument S. Toulmin outlines a theory of argument as it applies to various fields. He argues that the different argument fields contain arguments that are either field-variant or field-invariant.[27] Field-variant arguments aim to be valid only within the field in which they are being made, while field-invariant arguments should be valid across argument fields. For the skeptic of field-invariant arguments, their application in another field does not change their skepticism, as the conditions for validity stay the same. The issue is rendered more complex in cases where arguments are presented as field-invariant in order to extend skepticism of those arguments to another argument domain. Climate change dissenters present scientific argument as representing an unsettled field-invariant warrant in the public sphere. By establishing the science as unsettled, they undermine science as a fait accompli for the deliberation of greenhouse gas restrictions and eliminate entirely any value that science has even as a field-variant warrant. Both assenting and dissenting groups are guilty of presenting science in these field-invariant terms, though this ultimately favors dissenter argumentation. In "Purpose, Argument Fields, and Theoretical Justification," R. Rowland argues that field theory's

[27] Toulmin 2003

relevance lies in a description of overlapping fields as they relate to a specific controversy.[28] For Rowland, the climate change controversy illustrates how carefully dissenters have crafted their argument strategies. Though they use scientific language and tap into scientific ethos they are unconstrained by the norms of science, as their primary audience is not the scientific community, but rather the public. This allows dissenters to make appeals to certainty that their colleagues who disagree with them may not.

In "The Personal, Technical and Public Spheres of Argument: A Speculative Inquiry into the Art of Public Deliberation" G. Thomas Goodnight explains that the process of public deliberation is inherently probabilistic, with arguments seeking to shape the future against a background of uncertainty. For Goodnight, there are three spheres that ground argument: personal, technical, and public. The three all involve different forms of Burkean identification, with the personal sphere grounding arguments in consubstantiality, the public sphere grounding arguments in partisanship, and the technical sphere grounding arguments in identification with the work of a special occupation.[29] Goodnight acknowledges that these spheres do not represent discrete closed off systems of justifications but only that they are useful categories from which to draw in identifying differing argument practices. Those practices that are grounded in the personal or technical sphere but find their way into the public sphere are by necessity changed when they enter the public realm, as public reasoning transcends either personal or technical argumentation.[30] When analyzing the relationship of the technical sphere to the public sphere and the germination of arguments from the technical sphere into the public sphere, Goodnight posits that technical controversies may spillover into the public sphere when agreement cannot be reached by technical interlocutors. The public realm is the site of arbitration of a technical

[28] Rowland 2008
[29] Goodnight 1982
[30] Goodnight 1982

conflict. What is interesting about the case of climate change is that the controversy has promulgated in exactly the opposite direction, agreement has been reached in science but the dissenters have taken their case before the public post hoc. In a sense the failure of technical deliberation to reach closure demonstrates the transcendence of partisan concerns over technical conclusions, illustrating the power of the public sphere but not necessarily of public dialogue.

In "A 'New Rhetoric' for a 'New Dialectic': Prolegomena to a Responsible Public Argument," Goodnight argues for a revision to Perelman and Olbrechts-Tyteca's The New Rhetoric. In keeping with the wisdom of Aristotle, Goodnight's formulation of a "new rhetoric" must have as its counterpart a "new dialectic." For Goodnight, van Eemeren and Grootendorst hit it in on the mark in their evaluation of The New Rhetoric as lacking a dialectical basis.[31] Goodnight hopes to pursue a new dialectic that serves as a foundation for responsible public argumentation. Towards that end, he asks whether it is possible to "formulate a theory of rhetorical argument informed by a dialectic rooted in speech acts and communication ethics."[32] For Goodnight the possibility of just such a responsible rhetorical argument hinges on its conceptualization as "the situated discourse of a public forum produced when a community addresses matters of common urgency and undertakes informed action."[33] Alternatively, understanding rhetorical argument as "the psychological manipulation of an audience by the cunning use of linguistic techniques"[34] will undermine our efforts to ground it in a responsible deliberative ethic. In the climate change controversy the manipulation of an audience's psyche constitutes the call for dialectical engagement in the public sphere, demonstrating the importance

[31] Goodnight 1993
[32] Ibid, page 333
[33] Ibid
[34] Ibid

of deliberative ethics as a pervasive rather than perfunctory force. This is easily demonstrated in the representation of climate dissent as just "the other side of the climate debate."[35]

In "Science and Technology Controversy: A Rationale for Inquiry" Goodnight deepens his understanding of controversy and applies it specifically to issues involving science and technology. Goodnight explains that the configurations of controversies "change and become much more deadly, as domestic disputes change, and rush outwards with international consequences. Thus, with the scope of vast weather systems and disturbances, macro-disputes swirl and eddy across the globe."[36] Controversy theory, like climate science, relies on probabilistic methods and modes of discovery. Goodnight says "as the projects of modernity multiply and spread over space and time, the domain of controversy itself widens, and with these epistemic, cultural, social, technical and political phenomena the practices of communicative reasoning are ever more greatly challenged."[37] This raises the possibility that the *communicative space* itself and the call to extend it can forestall and sustain a faux controversy. In particular the way in which a dissenting group adopts a strategy of reflecting the argumentative practices of the consensus group is a way of widening the space of the controversy. In order to construct a parasitic legitimacy the call to broaden the communicative space must be negotiated in a public setting, where the appeal to scientific expertism and consensus is out of bounds precisely because it is the site where technical controversies emerge and are dealt with. To appeal to a settled truth is to remove the issue from the bounds of deliberation, thus the climate dissenters appeal to the very deliberative foundations that Goodnight hopes will prevent this type of argument from being sustained.

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[35] Beck 2007
[36] Goodnight 2005, page 26
[37] Goodnight 2005, page 26

In describing the evolving relationship between scientific controversy and political controversy Goodnight quotes Randall Collins' demarcation of three "historical epochs of such controversies,"[38] citing the third epoch as being the "period in which prominent segments of science are allied with the military and economic establishments and are opposed by lay movements— usually in the educated upper-middle class—in alliance with dissident scientists. This is our own period, which came into existence after 1945."[39] Though this period was perhaps characteristic of the public sphere surrounding nuclear weapons policy during the cold war, it is no longer descriptive of our current historical epoch. The concluding chapter argues that we have entered a fourth historical epoch where the alliance between scientific dissidents and lay movements has broken down and in fact reversed. Dissident science, in the form of climate dissenters is now in service of the economic and military establishment, working for Big Oil, rather than opposed to it. Prominent segments of science have now found themselves at odds with these powerful interests, rather than allied with them. The re-alignment of institutions and science came about in part because of a failure to end controversy, rather than because of efforts to promote it.

Perelman and Olbrechts-Tyteca, Toulmin and Goodnight provide the core of the argumentation theory for the background of this project. The theoretical concepts that have been taken from their work may not be useful in all contexts, but are particularly so in examining the climate change controversy in the public sphere. The exercise of argumentation within this controversy may hold some clues as to how science policy controversy works generally, and so many of the concepts may be useful in evaluating the progression of argument in those

[38] Goodnight 2005, page 27
[39] Collins 1993, page 308

situations. The remaining portion of this chapter will more fully describe the following four chapters.

IV. Outline of Chapters

Chapter two begins by describing Al Gore's An Inconvenient Truth as a rupture into the public sphere in the controversy over the status of climate science. The reasons that the controversy erupted at that particular point in history are related, congruent factors. The Bush administration had accelerated their politicization of science, specifically admonishing James Hanson the director of NASA's Goddard Institute for Space Studies for speaking out about his views on climate change.[40] These and other events provided ripeness to the controversy that supported Gore's public engagement with it. The dissenters' reaction to Gore's film incorporates two principles of dissent, reflection and incorporation. Dissenter films made in response reflect some of the successful strategies of the film in a way that undermines Gore's position while simultaneously calling for the dissenter response to be incorporated into the public deliberation and argumentation.

The Gore film is also a chronological and thematic center point for the controversy. Chronologically, starting with Gore's film allows this project to focus on the contemporary side of the issue, as well as organizing a coherent starting point for the evolution of the controversy through the end of the Bush administration and into the Obama administration. Thematically, Gore's film also represents an important historical engagement with science policy controversies and the idea of dissent and skepticism. He establishes an apt comparison early to the dissent and skepticism of the tobacco companies in the days before the science was certain that smoking was a leading cause of lung cancer. Gore also weaves narrative into his telling of the dangers of tobacco skepticism, relaying the story of his sister's death from lung cancer. The comparison and

[40] Mooney 2005

narrative illuminates a point about the temporal nature of controversy, even if the particular issue is not the same; similar argumentative strategies can be used in different science controversies. This is important for assessing future controversies and predicting what level of similarity they will have to contemporary ones.

In response to the Gore film, Glen Beck, a noted conservative commentator for Fox News, produced Exposed: Climate of Fear. Beck begins by describing the stasis of the debate, namely that both sides agree that the world is getting warmer, by ".7 degrees Celsius over the last 10 years."[41] Not surprisingly, that is the extent of his agreement with Gore. Beck articulates his disagreement with Gore around the science of climate change and the economics of Kyoto, citing the unfairness of the treaty towards the United States. Beck's analysis of the Gore movie is a microcosm for the entire controversy; he moves through the dissenter position highlighting all of the important pieces of their disagreement with Gore and the IPCC. It also can stand in as an exemplar of the dissenting opinion that the Gore critiques. It is the existence of both movies, and their juxtaposition that is most interesting about this controversy and the way that the public understands it. Beck's presentation of "the other side of the climate debate,"[42] is part of a larger strategy by which deliberation and the call for sustained dialogue becomes a chimerical endpoint, a stasis without end that is meant to forestall the possibility of action.

Chapter two establishes that the controversy was taken up in the public due in part to the policies and attitude of the Bush administration towards climate science. This rupture into the public sphere was achieved through Gore's film and highlights some of the historical tendencies of scientific dissent. The rupture was then sustained through the argumentation of dissenter's such as Glenn Beck. His strategy as well as that of other dissenters in sustaining the controversy

[41] Beck 2007
[42] Beck 2007

in the public sphere as long as possible relies on the implied benefits of public deliberation. Chapter three takes up the controversy at this point, seeking to understand how the public evaluated the arguments that were made on either side.

Chapter three is concerned with how technical argumentation becomes integrated into the public consciousness of an issue. There is a conceptual division between theoretical and practical considerations in the public understanding of this controversy. Additionally, two points about media practices and usage figure into this analysis. The chapter begins with an analysis of the theoretical differences in the standards of justification between scientific argumentation and public argumentation. These differences are reflected in two ways, first in the exercise of argumentation by scientists in the public sphere (particularly assenters) and second in the way that the public understands what the justifications for a scientific argument are. Practically speaking, there are two important considerations regarding how the public views scientific argument in the public sphere. First, the public's perception of science as a monolithic enterprise, which derives its credibility from a broad range of successful applications in public policy, causes every "expert" to be treated the same, regardless of their standing in the field.[43] Second, dissenting groups encourage this presumption through their argument practices and content. Media plays into the public's assessment of this controversy in two ways. First, the media presents the controversy as having two distinct sides that are equally warranted and supported by qualified scientists.[44] Second, the public's increasing use of digital media in evaluating public argument controversies has provided climate skeptics a new playing field where they can compete with mainstream scientists on an equal footing.

[43] Pew Research Center for the People & the Press 2009
[44] Gelbspan 1997

The epistemic foundations of scientific inquiry are distinct from those of deliberative argument. Science is concerned with pursuing an objective truth that provides certain answers to distinct questions, while the province of deliberation is justifying a course of action in the face of uncertainty. These differences find themselves expressed in the different ways that assenter and dissenter groups make public arguments. Assenters hold to the ideals of science and so they feel compelled to use the careful language of science when describing their position, while dissenters use the different justificatory standards of the public sphere fully to their advantage and feel no similar compulsion. Additionally, the public perceives the standard of justification in science as being one of demonstration, and so when evaluating the scientific arguments of the assenters the public is more likely to side with the dissenting opinion, given that climate models are speculative rather than empirical.

The practical upshot of these theoretical concerns is that the public has an understanding of science that is conducive to successful public dissent against a consensus position in the technical sphere. There are also two other practical concerns governing this understanding. First, the perception of science as a cohesive, homogenous discipline has important implications of the public understanding of the climate change controversy. Second, dissenter argumentation acknowledges and encourages this perception. As a monolith, science is viewed quite positively by the public with 84% of Americans reporting that they believe that science has a mostly positive effect.[45] Though there are relevant differences between the types of research that scientists engage in, as well their qualifications, those differences are unlikely to be perceived by the public when evaluating scientific information, as science is perceived holistically. Dissenters actively encourage this perception of science as monolith. The use of certain scientific practices, as well as similar document construction and webpage design may also explain why the public

[45] Pew Research Center for the People & the Press 2009

views the climate change dissenters' as being integrated within the scientific community. They hold conferences, engage in panel discussions, publish documents, have an organization with a similar name, and also boast many experts who have PhDs and readily express their views in public.

The media is imbricated in the public perception of controversy in two ways. First journalistic training requires writing about both sides of an issue creating a larger perception of controversy, and second the increasing use of digital media by the public allows dissenters to gain legitimacy in ways they could not have in the past. The presentation of the issue by the media focuses on the controversy in science, not the differences in the scientists presenting their views. The pragmatics of selecting stories to report on as well as journalistic training to avoid bias contributes to the reporting of the controversy as having two sides. This reporting has resulted in a situation where the majority of articles that discuss climate change are unbalanced in favor of reporting the controversy.[46] Given that the presentation of climate science in the mainstream media is out of balance with the scientific consensus found in peer-reviewed journals[47] it is no surprise that the public finds itself at a loss in accurately assessing the science of the controversy.

The consumption of digital media also shapes the way that the public understands and perceives the controversy. The digital media include information sources that are understood as more democratic, such as youtube and blogs, as well as tapping into the institutional ethos of a professional website. The dissenter use of these modes of information mix logical argumentation with aesthetic quality, both of which play a role in establishing the legitimacy of the dissenter position. These two considerations help explain the continued success of climate skeptics in

[46] Boykoff & Boykoff 2004
[47] Oreskes 2004

inserting their arguments in the public sphere, typified by the recent Climategate scandal which has been almost entirely propagated by the use of internet sources including blogs and video on youtube.[48]

Chapter three identifies a few key points that shape the public understanding of the controversy over climate change. The theoretical and practical differences between scientific argumentation and rhetorical argumentation work in conjunction with the public perception of science as a monolith to produce a magnified belief in the controversy. The use of specific dissenter argumentation strategies reinforces this belief by presenting the trappings of science without the substance. Additionally, the media reports on this controversy in a balanced fashion, over-representing the amount of dissent. Lastly, the increasing use of digital media has given the dissenters new options for accessing the understood legitimacy of science in the mind of the public. These combinatory factors help to explain the public uncertainty about the science of human-induced climate change.[49] Chapter four seeks to explain how the dissenting scientists are able to maintain a credible public argument, despite the scientific consensus.

Chapter four discusses the importance of two common threads of argument that climate change dissenters advance when speaking to each other and when addressing groups of assenters. The first is a specific version of the Galileo story told to increase their group identification as scientists, demarcate them from other dissenting groups that may object on religious grounds, and demonstrate their moral purity and superiority as a group that is persecuted precisely as Galileo was. Dissenters present a version of the story of Galileo that fits their objectives, focusing largely on how he was persecuted by the Catholic Church because of his views in support of the heliocentric model of the solar system. This comparison to Galileo by the

[48] Crovitz 2009
[49] Pew Research Center for the People & the Press (2009)

dissenters arises from a need to incorporate the powerful stories of science into their narrative as a way to access the legitimacy of the scientific edifice. The second thread of argument is the dissenter treatment of the comparison to Intelligent Design Theory (IDT). The prominent dissenter and physics professor at MIT, Richard Lindzen, uses two different argument tactics in addressing this comparison. First he dissociates the dissenter position from IDT by arguing that the types of justifications for the two are incompatible. Second he associates IDT with the consensus position on climate science by arguing that the justifications for climate science are similar to the justifications for IDT.

The contestation over Intelligent Design and the usage of Galileo's story illustrates that the power of a consistent narrative in science and reporting on science should not be underestimated, as narrative is the vehicle through which science justifies itself to the public. Dan Fagin, associate professor of journalism at New York University says of teaching science journalism that "even as we teach the subtleties of cutting-edge science, we never stop talking about compelling narrative, clear explanation, and coherent organization. Because if a reporter can't tell a story, it doesn't matter how much science she knows."[50] The dissenters attach themselves to a historic scientific hero by telling the story of Galileo in a certain way. They describe Galileo as representing dissent against established opinion and relate their dissent to his heroic act of defiance against the Catholic Church. If public opinion is anything to go by it appears that the dissenters are controlling the terms of the story and thus the direction of public understanding and sympathy.

There is also opposition to the representation of the Galileo narrative as supporting climate dissent. At least two other groups have a counter-narrative that they use to support their political agendas; assenter groups and conservatives with a generally skeptical attitude towards

[50] Fagin 2005

science. The assenters' version of the story focuses on the religious element of Galileo's antagonist, the Catholic Church. By framing the story as demonstrating the dangers of allowing science to be controlled by a politically powerful ideology, assenters hope to convey a need to close ranks and protect science from the encroachment of dangerous political interests. The third version of the Galileo story is presented by conservative groups that hope to use the narrative as a justification for skepticism about science generally. They connect climate change dissent to dissent against other, even more established scientific theory, such as evolution. The push for teaching Intelligent Design in schools is justified along with climate change dissent under the banner of Galilean skepticism.

This connection between IDT and climate change dissent is vociferously denied by the most prominent and qualified climate change dissenter, Richard Lindzen. Assenters and their supporters assert that the two groups are akin in their scientific dissent, but in responding to this charge Lindzen uses two different argument tactics, dissociation and association. Borrowing from Perelman and Olbrechts-Tyteca, this chapter takes these ideas of theirs and applies them to Lindzen's response. Dissociation occurs when an interlocutor attempts to illustrate the fundamental incompatibility between two other previously associated concepts. Lindzen does this by arguing that the type of science that climate change dissenters engage in is based on empirical observation, while IDT proponents do not. Lindzen then makes a move to associate IDT with the climate change science of the assenters based on the same idea. He argues that since both IDT and climate science are speculative, then the two are compatible, associated concepts.

Chapter four locates a key point of contestation in the public development of the climate change controversy as occurring around what the very definition of science is. The Galileo story

is one of the most important narratives in the development of the scientific identity and its application in this controversy illustrates that. Intelligent Design Theory represents an emerging threat to one of science's most hallowed theories, evolution and the meaning it has for scientific identity is strong as well. The different versions of the Galileo story and the negotiation of Intelligent Design Theory's association with each position point to the need for control over how to define science. As science and policy are increasingly intertwined, this evolving definition will determine what future uses of science are justified, and what policies science can justify. It is at this juncture that Chapter five takes as its point of departure.

Chapter five undertakes a synthesis of the first four chapters of this project and provides an analysis of the implications of the controversy for the primary and secondary audiences of this project. For the primary audience of rhetorical theorists and critics the implications of the controversy for argumentation theory and theories of controversy is discussed. Argumentation theory should not deal solely with the traditional object of study that Perelman and Olbrechts-Tyteca lay out as the "discursive techniques allowing us to induce… the mind's adherence to the theses presented." Rather, argumentation should include an analysis of argument as an end, rather than as a means to achieving assent. Additionally, public sphere theorists should be cautious in the support of controversy and deliberation as the ideal point, as the call for deliberation has been used to justify perpetual argumentation without closure in the climate change controversy. The final piece of interest for the primary audience is found in an analysis of Randall Collins description of the three historical epochs of science policy controversy. The conclusion argues that the climate change controversy heralds the entry into the fourth era of science policy controversy, an era characterized by powerful institutions supporting dissident scientists, while lay movements are aligned with prominent, mainstream scientists. For the

secondary audience of public policymakers, scientists and the media there is an analysis of the role of scientific narrative and ethos in sustaining the controversy. The role of science in crafting an epistemology founded on certainty is analyzed as it relates to the public perception of science in policy. Scientific argument has too often been presented as a trump card that overrides other forms of public deliberation, rather than as integrated into a larger epistemic community. This privileging has ultimately undermined the presentation of scientific argument in a public policy discussion of climate change, as the attitude of policymakers can now be to "wait and see" what the scientific conclusion is, so that they may proceed with unmitigated certainty. As postmodernism increasingly challenges the knowledge claims of science, one possible response is to reassert certainty. This strategy may ultimately backfire, policy deliberation cannot afford to wait for an epistemic certainty that science cannot provide, but rather must incorporate an understanding of the probabilistic nature of science into the deliberative process itself. As scientific controversies re-emerge and disappear, the deliberative orientation will come to bear upon the duration and character of the dialogue.

Chapter Two: An Inconvenient Truth as Rupture in the Controversy

I. The Terrain of the Rupture

This chapter is concerned with analyzing the rupture in the public sphere created by the release of the film An Inconvenient Truth on May 24, 2006. It then explores the dissenter response in Glenn Beck's Exposed: A Climate of Fear as sustaining this rupture in the public sphere. When analyzing Gore's film, this chapter accounts for some of the conditions that led to the creation of the film as a rupture point in the controversy. The first condition is the political treatment of climate change by the Bush administration and Gore's opposition to that. This outlines the temporal nature of the rupture and explains some possible perennial features of ruptures in technical controversies. The second condition is the general failure of the assenter group's use of photographic evidence to mobilize supporters for change. This explains why the switch to a new medium was necessary in the first place. These two factors were instrumental in creating an appropriate climate for Gore's analysis of the controversy and also for pushing forward the dissenter's reaction to the rupture. In this case, the rupture into the public sphere occurred in the way that it did because the political treatment of the technical debate was unsatisfactory for assenter groups allied with Gore, and the traditional methods for creating a rupture into the public sphere failed. An Inconvenient Truth, written by and starring former Vice President and Democratic presidential candidate Al Gore, presents a culmination of the technical argumentation on the status of climate science that is presented in the public sphere for arbitration.

After describing why the rupture occurred when it did, this chapter examines two primary ways in which it was achieved. First, Gore appeals to empirical evidence as a rationale for taking action to forestall further climate change. He points to the temperature record as proof that we are headed towards disaster. Additionally, he highlights the cyclical nature of skepticism by comparing climate dissenters to skeptics of the dangers of smoking. Specifically he argues that some former supporters of the tobacco industry are current climate change dissenters, pointing to their history of folly. Second, Gore moves beyond empirical argument, identifying the unprecedented nature of the crisis that we face. He relates the narrative of his sister, Nancy who died from lung cancer as a cautionary tale for society. He then compares the effects of climate change to the impacts of a nuclear war and presents the choice to accept the science and act on climate change as representing a moral issue equivalent to the slavery and desegregation.

Glenn Beck's response to the Academy Award winning documentary repeats a pattern of argumentative behavior that dominates the dissenter strategy. One tactic by scientific dissenters is discussed, as is the argumentative strategy that it satisfies. Tactically, dissenters rely on reflecting the content of Gore's film. By mirroring the narrative approach and substantive ideas of the film, dissenters such as Glen Beck establish an equal footing upon which their arguments are to be evaluated by the public. This argumentative tactic is pursued in order to support the strategy of incorporating the dissenter position into the public sphere and creating a residual rhetorical presence in the mind of the public when evaluating the controversy. Beck's film Exposed: Climate of Fear loudly proclaims a siren call for deliberative argument, presenting it as a response to be incorporated into the ongoing dialogue over climate change. This incorporative move is designed to sustain an argumentative stalemate as a path to victory by default, while

displacing the possibility of deliberation over the issue which acknowledges the necessity of closure and action.

II. Conditions for the Rupture

The first condition that was necessary in creating Gore's movie as rupture is that the political treatment of the controversy was unsatisfactory to the participants in the technical debate. Controversies continuously emerge and propagate, basking in the glow of political and public debate for a while only to submerge again when the issue has become moot. For a rupture to occur, a controversy that has been simmering out of sight in the technical or private sphere must again become present in the public sphere. Goodnight understands this ebb and flow in science controversy to be one without closure given that "once initiated controversies do not so much die out as become dormant, only to reappear in more virulent form later, when small changes unsettle the balances of well-known paths of argument…[51]" For Goodnight, the larger epistemic struggles between proponents of change and defenders of the status quo make themselves felt in science controversy, as do questions of truth and falsehood, probability versus improbability, and right and wrong. These are the "sites of struggle between prudence-based and modern reasoning"[52] and mark "the generative places of controversy."[53] A rupture in a technical controversy can occur when the argument participants perceive that the issue cannot be closed in the technical sphere, as Goodnight argues "the disagreement within the technical field grows so vehement that there arises two groups in unalterable opposition… Then neither informal disagreement nor theoretical contention is sufficient to contain the arguments involved. The dispute becomes a matter of public debate."[54] Such is the case with An Inconvenient Truth as the

[51] Goodnight 2005, page 27
[52] Goodnight 2005, page 28
[53] Goodnight 2005, page 28
[54] Goodnight 1982, page 219

political landscape changed so too did the technical controversy, creating a rhetorical exigency that Gore moved to fill first with a presentation and then with a documentary.

In the wake of his 2000 election loss to George W. Bush, Gore describes how he watched with dismay as the administration took back its campaign pledge to reduce climate change, even going so far as to deny that it was a problem. In The Republican War on Science, C. Mooney explains the Bush administration's science policy as a politicization of science.[55] For Mooney, Bush had a far-reaching strategy of manipulating scientific information, including climate science, to achieve political ends. Using tools established in earlier administrations, such as the Data Quality Act, as well as a few new tactics, the administration consistently urged further debate rather than an acceptance of the scientific consensus of the IPCC. Mooney specifically cites the conflict between the administration and James Hansen, director of NASA's Goddard Institute for Space Studies, over restrictions that had been placed on his communication with the media. Hansen charged that the administration had sought to muzzle him, stopping interviews, reviewing his lectures, papers and the content of any upcoming talks.[56]

Suppressing dissent was not the only way that the Bush administration obfuscated the climate consensus. In "Obscuring the Facts: The Bush Administration and the politicization of Science in the Greenhouse Debate" E. Panetta explains that a key strategy of the administration was to change government documents to express a greater level of uncertainty than was supported by the scientists preparing the documents.[57] The official policy of the Bush administration was to rely on market reforms rather than legislating reductions in emissions of carbon dioxide. Panetta also highlights the appointment of scientists with favorable views to influential positions, and the opposition to unfavorable scientists, as another strategy used by the

[55] Mooney 2005
[56] Revkin 2006
[57] Panetta 2007

administration to represent the dissenting opinion as the most scientifically relevant one. These actions included positions in NASA's press office and opposition to a former chair of the IPCC, Dr. Robert Watson's return to that body.

It was in the midst of this upheaval of argument and fermentation of controversy that Al Gore decided to take up his former passion for climate change reform. During his time in Congress Gore supported regulations on greenhouse gas emissions, and Kyoto ratification.[58] His initial response to the Bush administration's science policy was to start small, giving a slide-show presentation on the dangers of human-induced climate change. He hoped to change people's minds one lecture at a time. It was during one of these lectures that audience members had the idea to make the presentation into a documentary. In his book, An Inconvenient Truth, Gore explains that in the spring of 2005 he gave his presentation "to a large gathering in Los Angeles organized and hosted by environmental activist (and film producer) Laurie David. Afterward, she and another producer, Lawrence Bender, suggested that I ought to consider making a movie out of my presentation."[59] Gore's motivation in making the film was also related the power of the medium to reach larger audiences; he says that "If I wanted to reach the maximum number of people quickly, and not just continue talking to a few hundred people a night, a movie was the way to do it."[60] This motivation was linked with Gore's opposition to the Bush administration's politicization of science and dismissal of the technical consensus constituting the first condition that led to the film achieving a rupture into the public sphere.

The second condition facilitating the creation of the film and incidentally lending it increased potency in permeating the public sphere is the inability of photography to convey the message effectively. Though environmental groups have always used visual imagery as a way to

[58] Gore 2006b
[59] Gore 2006b, page 9
[60] Gore 2006b, page 9

bring their cause to the general public, visual evidence of climate change was failing to mobilize the public. In 1997 Greenpeace snapped an image of a crack forming in the Larsen B ice shelf in Antarctica, and used the image to visually illustrate the dangers of climate change. The image ultimately failed to rouse serious public concern, however.[61] In "Seeing the Climate?" J. Doyle argues that historically the visual medium of choice in environmental discourse is the photograph. She argues that "environmental groups have come to privilege visual representations of the landscape,"[62] pointing out that images document environmental abuses as well as evoke emotional responses, and in doing so are a crucial part of environmental communication. Photographic evidence of climate change however is self-defeating, as it represents the failure of preventative efforts to achieve success. This failure only became apparent after environmental groups tried to arouse public interest using the time-honored photograph.

It is no surprise that environmental movements are drawn to the power of the photograph; their subject matter is uniquely suited to visual presentation. In "Imaging Nature" K. Deluca and A. Demo argue that the creation of Yosemite National Park as well as the birth of the environmental movement in the United States was in part due to the resonance of photographs taken by Carleton Watkins of Yosemite Valley in the 1860s. These pictures provide iconic images of the American wilderness and for DeLuca and Demo political statements as well. The images played as much a hand in constructing the idea of the pristine wilderness that served as the basis for environmentalism as the broader debate at the time did. They argue that environmental images are often aimed at producing a sublime state. Specifically, the images are meant to induce a feeling of fear or terror because of the overwhelming vastness of the subject matter. In the Watkins photos, the only human-scale reference points are trees that are miniscule

[61] Doyle 2009
[62] Doyle 2009, page 285

compared to the cliffs that tower over them. Confronting the vast size and enduring nature of the cliffs in the images mocks our own mortality. Watkin's images of the mountain "El Capitan" are described by DeLuca and Demo as depicting a subject so vast and ancient that it transcends the human timeline and concept of size. Nature obliterates human understandings of time, standing outside of our measurement of it.

It is precisely the power of photography to efface the temporality of its subject that makes it counter-productive for representations of climate change.[63] Photographs only work to illustrate the way that things were in the past, even if the very recent past. Doyle examines photographs taken of retreating glaciers of the Larsen B ice field in Antarctica by Greenpeace in 1997.[64] Though the images are startling they cause confusion in the mind of an audience that is used to understanding environmental photography through an ahistorical frame. For environmental groups the photograph is the penultimate way to represent the majesty of an unchanging landscape removed from all human conceptions of time and space. Photography and environmentalism work well together when the issue is preservation of the pristine past, not documentation of humanity's impact on nature. Photographic evidence of climate change presents a picture of the present, and makes claims about the future, a radical departure from historic environmental photographs. The founding visual images of environmentalism depicted areas of Yosemite as being outside of the human timescale, and we get the sense that only through direct and intentional activity are we able to impact the landscape. With climate change, the places on the globe most likely to be affected are far removed from the source of the problem. The melting of the glaciers is related to the deforestation of the Amazon basin, but it is difficult for images of climate change to directly connect issues such as these in the mind of

[63] Doyle 2009
[64] Doyle 2009

those beholding the image. Climate change is a complex issue, with many different potential causes and a myriad of possible affects. The science is complex and largely inaccessible to the general public. This creates a situation where the argumentative context is as important as any image that is used to convey the urgency of the problem. In On Photography, Susan Sontag argues that photographs are a "a way of imprisoning reality, understood as recalcitrant, inaccessible; of making it stand still,"[65] not a way to contextualize the changing conditions that occur in a changing climate. Given these general limitations of photography and their specific implications for representing climate change adequately, it was necessary for environmental advocates of reform to find a new medium and an advocate that could work through this medium.

Al Gore and the story that was possible through a documentary were the perfect solution to the crisis that climate change advocates faced in achieving an insertion into the public sphere. Gore's documentary typifies many of the most adaptive elements of film, weaving together a narrative, scientific studies, and argumentation seamlessly together. The ultimate purpose of the film is thoroughly argumentative and reflects Perelman and Olbrechts-Tyteca's understanding of purpose as inducing or increasing "the mind's adherence to the theses presented for its assent."[66] In this case the thesis presented for assent is the IPCC's third assessment report, which established a scientific consensus that climate change was human-induced, or anthropogenic. This rhetorical character also underlies the creation of a rupture in the controversy over this proposition. In outlining his general theory of controversy, G. Thomas Goodnight provides a ground upon which to build our description of this rupture. Goodnight describes the point of departure for a controversy as "either a point placed in contention by a speech act, or the offered

[65] Sontag 1977, page 163
[66] Perelman & Olbrechts-Tyteca 1969, page 4

conditions for debate, or both."[67] Gore takes up *both* points when he seeks to rebut the scientific position advanced by the Bush administration and simultaneously displace the ground upon which those arguments are built. Gore's purpose is not solely to engage in a technical debate over the science of climate change, but also to present the controversy to the public for arbitration. This movement from the technical sphere into the public sphere marks the point of rupture as this technical controversy became a public one.

III. Navigating the Terrain

Given that other forms of public argumentation on climate change had failed to mobilize the public, and that the Bush administration was clamping down on government employees, it was necessary for an outside force to bring the issue before the public. Gore's appeal for public support of the technical conclusion is carried out in two methods that are woven together. First, he uses empirical argumentation to make his case for reform. Second, he uses narrative and appeals to the unprecedented nature of the crisis to push forward his critique of status quo lethargy. In navigating the public sphere, Gore takes the well-worn path of empirical argumentation but also marks new ground by emphasizing the unprecedented nature of the crisis. Gore uses two different threads of argument to weave his empirical cloth; first he attests to the reliability of data that demonstrates climate change and second he points to the historical inaccuracy of scientific skepticism. In the beginning of the film, Gore graphs rising carbon dioxide levels that were recorded using a methodology of a favorite professor of his, Dr. Roger Revelle. The graph depicts a sharply upward trend in atmospheric carbon dioxide levels, providing unmistakable visual evidence of the human impact on the atmospheric concentration of greenhouse gases. He provides pictures of Mt. Kilimanjaro in 1970, 2000, and 2006 as well glaciers from Glacier National Park including Grinnel Glacier from 1910 and 1998 and Boulder

[67] Goodnight 1991, page 5

Glacier from 1932 and 1988, in each series of pictures, the glaciers are getting smaller, charting the continuing effect of climate change. Gore also puts a temperature graph going back 1000 years next to a graph illustrating the carbon dioxide levels for the same period, followed by a large graph of the same data going back 650,000 years. He appeals to the empirical levels of carbon dioxide in the atmosphere, explaining that never in this long history have the levels gone above 300 parts per million.[68] Wrapping up this segment, Gore projects the levels of carbon dioxide far above the historic levels, pointing to the possible temperature of such a world.

After Gore presents the mundane scientific facts, he spices up the film with narrative. He relates the story of the tobacco company supporters in the late 1960's and connects the climate change dissenters to that story. In the film, he discusses the 1964 surgeon general's report regarding the connection between smoking and lung cancer. Before discussing the dissenting opinion on climate change he emotionally tells of his sister Nancy who as a lifelong smoker died of lung cancer. Gore argues that "the misconception that there is disagreement about the science has been deliberately created by a relatively small group of people."[69] Gore cites an internal memo of the dissenters where they seek to "reposition global warming as theory rather than fact,"[70] and compares it to a tobacco company memo that was released after the 1964 surgeon general's report. That memo argued that the goal should be to create doubt as a method of generating controversy.

Other people have noted the connection between tobacco supporters and climate change dissenters. Two prominent examples are Dr. Frederic Seitz and Jim J. Tozzi. Dr. Seitz is a former president of the National Academy of Sciences and the winner of numerous awards for outstanding work in physics. Jim J. Tozzi was formerly an official in the Office of Management

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[68] Gore 2006
[69] Gore 2006, 1:12:42-1:12:50
[70] Gore 2006 1:13:01, Begley 2007

and Budget and is a lobbyist for companies interested in blocking regulatory reform. In the May 2006 issue of Vanity Fair, the same month that An Inconvenient Truth was released, M. Hertsgaard points to Dr. Frederick Seitz as a direct connection between the Big Tobacco supporters and the current climate dissenters.[71] According to Hertsgaard, in the 1970's and 1980's Dr. Seitz helped R.J Reynolds Industries, Inc. give away $45 million to fund research into the health effects of cigarette smoking, money that was used to justify an ad campaign touting their commitment to science and research, while at the same time denying that the science was conclusive. Dr. Seitz became a climate change dissenter 20 years later, disagreeing with the 1995 IPCC assessment report, and writing a paper that excoriated the consensus position. Another person that mixes their support for the tobacco industry with their climate skepticism is Jim J. Tozzi, current head of the Center for Regulatory Effectiveness (CRE). During his time at the OMB he oversaw rules and regulations of the Environmental Protection Agency. After leaving OMB, Tozzi became involved in lobbying for increased scrutiny of the scientific basis for new regulations, pushing to allow corporate access to those studies. Tozzie achieved success with the Data Quality Act, which allows corporate interests to insert themselves into the regulatory process from the very beginning, legally allowing challenges to the studies that may eventually lead to regulatory reform.[72] This opens the door to corporations challenging regulations on climate change by bringing in their own cadre of scientists and studies that contradict consensus reports.

The story of Tozzi, Seitz, and others drive Gore's argument that "scientists have an independent obligation to respect and present the truth as they see it."[73] Gore hopes to incite a public reaction against climate change dissent as being unscientific and politically motivated

[71] Hertsgaard 2006
[72] Mooney 2005
[73] Gore 2006 1:14:37

discourse. Gore understands that if rational, logical argument was all that it took to get the public motivated then the climate scientists would have no need of him. This explains why he mixes the narrative of tobacco skepticism in with his description of the science of climate change. It also lies at the root of his telling the story of his sister, Nancy who dies of lung cancer. Gore hopes that the viewers of the film will relate their current choice of fossil fuel consumption to the choice that his sister made after science demonstrated that to keep smoking was suicide. That is also why Gore describes the issue of climate change not as a political issue but as a moral one. If it is a political issue, then the engagement in the public sphere can be a sustained with no end goal other than allowing the process to take place. As a moral issue, deferring action in the face of a settled truth presents an unethical choice to accept suffering in exchange for political expediency. Gore's presentation of the issue of climate change in the public sphere is framed around the need of the public to make a moral choice, not a political one.

Gore buttresses his defense of the issue as a moral one by relating it as a decision without precedent, comparable in scope only to the unrealized danger of nuclear war. As Goodnight points out, and Gore appreciates, controversy "pushes the limits of the available means of communication."[74] In the film Gore uses footage of a nuclear explosion to explain how nuclear weapons shattered the frame of reference for how we evaluate the consequences of war. The unimaginable destruction of a nuclear explosion becomes the way that Gore relates the danger of climate change as equally unimaginable, with the visual image of a nuclear explosion as an unwavering pathos appeal to back up his claims. In his Nobel Lecture accepting the Peace Prize in 2007, Gore argues that "the catastrophe now threatening us is unprecedented – and we often confuse the unprecedented with the improbable."[75] For Gore, this confusion arises in part from

[74] Goodnight 1991, page 2
[75] Gore 2007

the protracted controversy over the science of climate change, which can be addressed only through decisive action. At the end of the film Gore compares the issue of climate change to the choices the United States faced in pivotal moments in American history, all of which revolved around a moral dimension. He argues that the choice to stop climate change is like the choice to end slavery, the choice to support universal suffrage, and the choice to desegregate schools. In appealing to our historical moral sensibilities, Gore hopes to make the rupture that his film has created in the public sphere a short-lived foray that leads to action by generating a large public response. Glenn Beck's response film as well as other general forms of climate dissent hope to expand the public rupture of this controversy in order to sustain the deliberation of the issue as long as possible.

IV. Dissenter Response

There were many different responses to Gore's film from climate dissenters, the bulk of this chapter's analysis is focused on the Glenn Beck production Exposed: A Climate of Fear that aired May 2, 2007 on CNN Headline News. There are two primary reasons for focusing on this video. First, Glenn Beck has a large viewership for his current program on Fox News with over 2 million viewers in the week of April 13, 2010, almost double the combined ratings of CNN, MSNBC, and HLN.[76] The video itself had a modest viewing of 275,000 viewers in the 7pm slot and 370,000 viewers in the 9pm slot.[77] Second, the video represents many of the different arguments that the dissenters make in response to Gore's film, and so as a collection of these arguments Beck's video is a useful site to locate the negotiation of the controversy. Additionally, Glenn Beck discusses many of the themes of the controversy in other places, including his radio program and on other television appearances.

[76] Nielsen Media Research 2010
[77] Inside Cable News 2007

The Beck video is also interesting because of the argumentative strategies that it embodies. There are two principles of propagating scientific dissent in the public sphere that are contained within the film, reflection and incorporation. The video represents a strategy of reflection because it mirrors the various aspects of the Gore film, but engages in little invention of new argument. Beck's video is designed to be incorporated into the public controversy, so that it may have rhetorical presence for his audience. When taken in conjunction with Gore's video, these two principles operate as a form of dialectic in the public sphere.

In "A 'New Rhetoric' for a 'New Dialectic': Prolegomena to a Responsible Public Argument," Goodnight articulates a vision of the rhetor as a responsible, situated agent that respects the communicative norms of their fellow interlocutors. Goodnight argues that a "responsible rhetoric is governed by the principle that pressures to restrict communication should be resisted in the interests of deliberation and effective action."[78] Glen Beck's response to Al Gore's documentary presents a twisted version of Goodnight's responsible rhetor as a justification for perpetual controversy. Beck presents this vision by refuting the arguments in An Inconvenient Truth and calling for the celebration of disputation. By shifting the grounds of the debate to include the respect for constant argument, Beck undermines the central thesis of Gore's argument without meeting it head-on. Beck can implicitly defend the wait-and-see attitude that Gore explicitly critiques without ever engaging Gore on his terms.

At the outset of the video Beck begins by saying that "I want you to know right up front, this is not a balanced look at global warming. It is the other side of the climate debate that you don`t hear anywhere. Yes, Al Gore, there is another credible side."[79] In presenting "the other side" Beck crafts the dissenters' response by reflecting Gore's argument practices in order to

[78] Goodnight 1993, page 335
[79] Beck 2007

achieve a strategy of incorporating dissent into the public understanding of the controversy. Beck mirrors the strategies of Gore's documentary to piggyback off of the perceived credibility of the film. He does this by presenting testimony from scientific experts, empirical data, and playing "devil's advocate." This reflective strategy is designed to provoke the sense that Beck's position is as soundly supported and well-warranted as Gore's. Beck initiates but does not sustain a call for balance, as he is only interested in creating uncertainty. This call for debate and the presentation of the other side is designed not to provide closure to the controversy, but to prolong it. The purpose isn't to win the argument or convince the audience that certainty lies on their side, but only to sow the seeds of doubt, as doing so wins by default.

Beck's response reflects the Gore documentary in three ways. First, he presents his own climate experts to back up his interpretation, and points to their courage in risking their livelihood to do so. Second, he presents empirical evaluations of the climate debate, both his own interpretations of pivotal graphs of temperature and carbon dioxide levels, and re-interpretations of the graphs that Gore uses. Third, he blames the media for the public's understanding of the issue, pointing to their preference for stories that give hype but no facts, increasing the fear of climate change. These three methods should not be interpreted as the simple act of arguing with Gore but rather constitute a planned strategy that is made transparent by Beck's specific description of his presentation as "the other side."[80] Though he would have us believe that he is interested in a debate with Gore, this would mean accepting the adjudication of the debate by some qualified judge. From Beck's perspective, it is far better to sustain the debate indefinitely at the cost of a decision.

The first way that Beck mirrors the strategies of Gore's documentary is in presenting the testimony and evidence of experts, and arguing that those experts are risking their livelihood and

[80] Beck 2007

their jobs in appearing. This reflects both the scientific arguments that Gore presents in An Inconvenient Truth and the narrative behind how we are supposed to understand climate dissent and the IPCC report. Beck's featured experts include David Legates, Delaware's state climatologist and George Taylor, Oregon's state climatologist. Beck shows Legates indicting Gore's interpretation of the IPCC report as he argues that "The IPCC report is that the upper limit of sea level rise by the year 2100 is going to be about 23 inches."[81] Beck then features Taylor arguing that natural variation, not anthropogenic sources account for warming. The punch line for Beck is not the scientific disagreement, but rather the power of Taylor's story as a martyred scientist. Beck points a finger at the Governor of Oregon Ted Kulongoski (D) saying "solely because of this opinion, Governor Ted Kulongoski wants Taylor to be stripped of his title."[82] Interestingly enough, the quotation that Beck features from the Governor is hardly conclusive on the matter, simply "I just think that there has to be somebody that says that this is the state position on this."[83] It seems as if the Governor is hoping that the state climatologist would be willing to communicate the view of the state to the public, certainly a reasonable expectation. Just as Gore describes the case of James Hansen, the NASA climatologist persecuted by the Bush administration, Beck uses a statement from Taylor to support his argument that dissenting scientists are ostracized, and at risk of having their job terminated. Beck quotes Taylor as saying: "Being skeptical about the effects of human-caused greenhouse gases on global climate variations can threaten one`s long-term job security." Beck then quips that "He`s choosing his words very carefully. These days it seems you have to."[84] The importance of Beck's strategy in reflecting Gore's narrative of scientific martyrdom and presentation of

[81] Beck 2007
[82] Beck 2007
[83] Beck 2007
[84] Beck 2007

scientific evidence is directly related to his overriding goal of sustaining the rupture in the public sphere as long as possible, and the most effective way to do that is to provide the other side of every claim, no matter how contrived.

The second method that Beck uses to mirror Gore's documentary is the use of empirical data and an analysis of historical controversies. Beck analyzes reports of global cooling in the 1970's citing an L.A. Times article from 1978 with the headline "No End in Sight to 30-Year Cooling Trend in Northern Hemisphere,"[85] and a disagreement in the New York Times from 1959 and 1961 with two different headlines, "A Warmer Earth Evident at the Polls," and "Scientists Agree World is Colder."[86] These comparisons are designed to demonstrate that there is no historical consensus on climate change, and undermine Gore's narrative comparing the dissenter response to the tobacco skeptics of the 1960's. In order to demonstrate a broader empirical trend about the nature of consensus Beck argues that "scientific consensus has been overturned over and over again throughout history, from eugenics in the 1940s to global cooling of the 1970s."[87] If the current consensus is unlikely to last he argues, why should we make drastic changes in our lifestyle? When talking about Gore's temperature and carbon dioxide graphs Beck brings in Tim Ball, who argues that the relationship between rising levels of carbon dioxide and temperature that Gore establishes is actually backwards. Ball cites ice floe records as disproving the link, but does little analysis of how they show the link to be false. The purpose of undermining the science and providing a counter-point to the Gore presentation is that when exposed to both sides of the argument, Beck hopes that the audience will conclude that the reality is somewhere in the middle.

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[85] Beck 2007
[86] Beck 2007
[87] Beck 2007

The third strategy of Gore's that Beck adopts is the targeting of the media for the public's ill formed opinion of climate change. Instead of emphasizing the way that the media over-reports controversy, he argues that the media over-emphasizes the fear and hype surrounding the controversy. Beck accuses the media of driving the hype over climate change quoting Ball who says "The problem with the media is that it`s essentially become a business, and everything`s got to be more sensationalized."[88] Beck argues that he is "trying to cut through the hype"[89] which "isn`t sexy"[90] arguing that "the ratings are in the disasters, and the media knows it."[91] Though his treatment of the media is unsubstantiated, it does provide a counter-analysis of the media's motivations and bias against Gore's account. Beck's treatment of the media's representation of the issue as it relates to his argumentative strategy will be discussed as well.

The argumentative practices discussed above are based on the tactic of mirroring Gore's practices in the pursuit of a rhetorical strategy designed to create a "balanced" view in the mind of the public when evaluating the climate change controversy. The overall purpose of Beck's response is designed to be incorporated into the larger debate over climate change. This demonstrates a recognition by the climate change dissenters that if argumentation over climate is sustained for a long enough period of time, they will have won by default. If that goal is accomplished then the arguments that dissenters make are only important insofar as they achieve that end. Beck highlights a more modest version of this incorporative move as his purpose, saying "what we`re really trying to do here is trying to just raise questions, open people`s minds up."[92] Though only Beck knows his motivations in presenting his television special, there are two good reasons to believe that his primary motive was the continuation of public argument at

[88] Beck 2007
[89] Beck 2007
[90] Beck 2007
[91] Beck 2007
[92] Beck 2007

the expense of deliberation. Deliberation has as its goal a solution while argumentation is simply the process by which the truth of a proposition is debated, a distinction that is felt in this case. The first piece of evidence that supports this conclusion is provided by an analysis of Beck's radio program from April 30, 2007. On this program, two days before his televised special Beck compared An Inconvenient Truth to Nazi propaganda and Al Gore to Hitler. The second piece of evidence comes from an interview that Beck had with Forbes Magazine published on April 26, 2010 where he gives his motivation for his radio and television program as business oriented and not politically focused.

On his radio program on April 30, 2007 Glenn Beck constructs a sustained argument comparing Al Gore and the United Nations to Hitler and the Nazis. In talking about the consensus position he says "you must silence all dissenting voices. That's what Hitler did. That's what Al Gore the U.N., and everybody on this global warming bandwagon… has called me a fascist for doing it."[93] The comparison to Hitler is surely not in the interest of keeping the media from becoming sensationalized or cutting through the hype. Ironically, in Beck's television special David Legates the state climatologist of Delaware sums up the reason behind the Nazi comparison best; "When you have the science on your side, you argue the science. When you don`t have the science on your side you attack the messenger."[94] Interestingly enough, there are only three explicit Nazi references in the television special, none of which specifically target Gore or the United Nations report. In fact, Beck accuses the media of comparing climate change dissenters to holocaust deniers, quoting a piece that Ellen Goodman wrote in the Boston Globe, as a way to frame media reporting the IPCC position as being unreasonable and overly reactionary. In an interview published on April 26, 2010 in Forbes Magazine, Beck discusses his

[93] Beck 2007b
[94] Beck 2007

motivation for his television and radio programs. If we take him at his word, then his motivations may be more about running his media program as a business and pursuing sexy stories for ratings at the cost of cutting through the hype. In the interview, Beck says "I could give a flying crap about the political process"[95] and "We're an entertainment company,"[96] when describing his motivations for his television and radio show. Both the Forbes interview and the different narratives in Beck's radio show as well as his television special on climate change suggest that his motivations are directed at sustaining a heated public argument at the expense of deliberative activity and debate.

The argumentation of Glenn Beck in Exposed: A Climate of Fear gives reason to reevaluate what the purpose of public argumentation is and also how it is carried out. A foundational understanding of the object of study for the theory of argumentation is provided by Perelman and Olbrechts-Tyteca as "the discursive techniques allowing us to *induce or to increase the mind's adherence to the theses presented for its assent*."[97] Applying this understanding of argumentation to Beck's arguments may cause us to make erroneous conclusions regarding its predicted effectiveness. If we were to simply point out the inconsistencies in his radio show and his television program, factual inaccuracies of the data that he presents, and the differences between a state climatologist and a NASA scientist we might conclude that Beck's arguments were unlikely to succeed in persuading the majority of people. This analysis of Beck's argumentation would be off the mark however because, as is more thoroughly discuss in the next chapter, a plurality of voters in the United States believe that climate change is caused not by human action, but by natural factors, 47% to 42%.[98] At 52% an

[95] Rose 2010
[96] Rose 2010
[97] Perelman & Olbrechts-Tyteca 1969, page 4, emphasis in original
[98] Rasmussen Reports, 2009b

even larger percentage believe that there is significant disagreement among scientists on the issue of climate change.[99] What this data tells us is not that Beck does a better job of analyzing the issue, or that the thesis that he presents is closer to the truth of the matter, but rather that we should understand his argumentative objective as the creation of uncertainty in the mind of the public, rather than a presentation of a series of theses to which he wants the audience to adhere. The television special and the dissenter response to the public controversy over climate change are designed to instill the rhetorical presence of their arguments in the minds of the public, and not necessarily to achieve adherence to the theses presented. This is especially true with complex science controversies as the presentation of a sophisticated counter-argument can lead to apathy.[100] The purpose in presenting a reflective set of arguments in the video is not to convince the audience of the truth of Beck's position, but rather it fulfills the goal of incorporating the video into the context of the public controversy on climate change. In future science policy controversies where the issue of scientific consensus is at stake in the outcome, it would be unsurprising to see a similar argument strategy at work.

[99] Rasmussen Reports 2009
[100] Johnson 1990

Chapter Three: Scientific and Public Argument in the Controversy

I. The Disjunction between Scientific Consensus and Public Perception

This chapter is concerned with the disjunction between the scientific consensus on climate change and the perception of that consensus by the American public. There are two organizing principles in examining this disjunction, one theoretical and one practical. The theoretical foundations for scientific argumentation and argumentation in the public sphere rely on different deliberative practices and standards. These differences can cause scientific argument to be expressed unevenly and irresolutely when placed into a political context. Though the public understands science as producing certain knowledge the likelihood of complete certainty in science is very low. Practically, the American public has limited understanding of scientific deliberation and practice. This results in a perceptual leveling of scientific credentials and qualifications in the mind of the public that washes out relevant differences between assenting and dissenting groups and contributes to creating a magnified public perception of controversy. Dissenting groups encourage and actively promote this understanding of science as a monolith through the replication of the arguments styles and practices of the assenting groups. The dissenters actuate this strategy in their conferences, naming conventions, and the construction of websites. Additionally, dissenters mix scientific and deliberative argument by appealing to the economic consequences of decisive action on the climate as a way to appeal to the public's preference for the status quo.

This preference is shaped by the media which acts as both the intersection of science and politics and the site of contestation for the public's loyalty. There are two points about the media

that are relevant for the discussion of the public's skewed perception of the climate controversy. First, the mainstream media is trained to use journalistic balance when reporting on an issue that may be potentially contentious. This results in media reports that overstate the level of controversy in the scientific community. Second, the American public is increasingly turning to electronic forms of media for information about the world. This allows stories to quickly propagate that have a viral interest, even if they do not have much substantive bearing on the controversy itself, stories such as the Climategate scandal.

Before proceeding to analyze why there might be a difference between the scientific consensus and the public's understanding of this consensus, it first must be established that this is the case. The National Academy of Sciences, which brings together committees of experts to advise the public and the government on issues of science policy, periodically updates its report "Understanding and Responding to Climate Change," containing its description of the science of climate change. The most recent 2008 edition, argues strongly for a scientific consensus, stating that "The scientific understanding of climate change is now sufficiently clear to begin taking steps to prepare for climate change and to slow it. Human actions over the next few decades will have a major influence on the magnitude and rate of future warming."[101] In its 2007 Assessment Report, 4th edition, The Intergovernmental Panel on Climate Change (IPCC) concurred, stating that "Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years."[102] Established by the United Nations Environment Programme and the World Meteorological Organization to provide scientific information about climate change and its possible effects, the IPCC is composed of

[101] National Research Council 2008
[102] IPCC 2007 "Summary for Policymakers," page 2

scientists from around the world working to interpret thousands of studies and produce recommendations for governmental policymakers. These two organizations represent a number of scientists that have come together to present their latest research to non-scientists who must make informed decisions with the information they have available.

These scientists do not engage in any actual research themselves but only interpret existing studies. The peer-reviewed literature on climate change also concurs with the National Academy of Science and the IPCC. In 2004, Naomi Oreskes, Professor of History and Science Studies at the University of California San Diego, studied the findings of publications in peer-reviewed scientific journals available on the Institute for Scientific Information (ISI) database that listed "global climate change" as a keyword. She analyzed the abstracts of 928 articles and found that not a single article rejected the consensus position on climate change. Given this widespread consensus we would expect a similar understanding of the science by the American public, but that is not the case. A 2010 Gallup poll revealed that increasing numbers now reject the consensus position. According to the poll, 48% of Americans believe that the seriousness of global warming is generally exaggerated by news media. Additionally, 36% of Americans responded that according to their impression most scientists are unsure about whether warming is occurring or not, while 10% responded that they thought most scientists believe that warming is not occurring.[103] The public is now almost evenly split on their perception of disagreement in science and their belief in the general threat that climate change represents.

Before moving through the analysis of the public perception of the scientific consensus, it is appropriate to recognize a significant scholarly debt. E. Panetta's "Obscuring the Facts: The Bush Administration and the Politicization of Science in the Greenhouse Debate," provides a solid foundation on which this chapter has been built. Panetta's thesis is that "the Bush

[103] Newport 2010

administration is committed to rekindling the debate over the uncertainty of climate research in the face of the scientific consensus on the subject." He supports this argument with a number of examples of how the Bush administration engaged in a systematic strategy of discrediting scientists with the majority opinion, politicized the appointment process, and misrepresented the science of climate change. Given that a majority of the public now believes that there is significant disagreement in the scientific community[104], it seems safe to say that Panetta's thesis has been borne out. Though this project expands on the examples and analysis of Panetta's work, there are also some major differences between his thesis and the thesis of this project. First, though institutional practices are important in determining the direction of the controversy, features of the arguments of climate change dissenters make it difficult to move this controversy back into the technical sphere. As the previous chapter discussed, those features include the idea that the purpose of climate change dissent is argument for argument sake as a way to hijack American democracy's deliberative process. Second, this project extends Panetta's analysis of the media to include new electronic media that shape the evaluation of the controversy. This includes an analysis of webpage design, the recent Climategate controversy over hacked assenter emails, and a YouTube video that was made to commemorate the event. Third, the dissenters engage in a re-articulation of the story of Galileo, a narrative that has particular rhetorical importance for science as it demarcates itself from other epistemic communities. The next chapter is concerned with the features of this narrative and its contestation in dissenter and assenter argumentation.

II. The Theory of Climate Change Dissent in the Public Sphere

[104] Rasmussen Reports 2009

Given the disjunction between scientific consensus and public opinion, who or what is to blame? The theoretical and practical differences between scientific argumentation and public argumentation play a role in this difference, as do public perceptions of science, the media's reporting on climate change and the increasing use of electronic media by the public. The justifications used for arguments in science and arguments in politics rely on a divergent understanding of what knowledge is. Knowledge in science requires a great degree of empirical certainty, while knowledge in deliberative forums is more probable. These differences and their effect on the controversy are explored here.

The first contributing factor to the divergence between the public and science is the different understanding of what constitutes knowledge in the scientific community and the public sphere. The branches of the differing epistemologies grow from the differing subject areas with which each epistemic community is engaged. The mode of discourse in the public sphere is argumentation concerned with the "creative resolution and the resolute creation of uncertainty,"[105] while the mode of discourse in science is disclosure of truth, specifically those "truths about a world that is independent of human cognition, and, among those truths, some do not merely identify superficial aspects of nature but reveal things and processes that are remote from everyday observation."[106] The roots of these distinctions may lie in Plato's The Republic and his description of doxa and episteme. For Plato, doxa represented opinion with two sides to any given opinion while episteme represented "true opinion combined with reason (logos)"[107] The best that deliberative inquiry can strive for is doxa, while science hopes to provide episteme. Deliberation begins where science ends, science can tell us what the gene is that causes breast cancer, but it cannot tell us how to craft policy from that information. The very exercise of

[105] Goodnight 1982, page 215
[106] Kitcher 2001, page 11
[107] McClean & Aspell 1997, page 179

deliberating in the public sphere inevitably increases our uncertainty, while science seeks to reduce uncertainty to as great a degree possible. Public argumentation that uses science as a justification brings it into the realm of doxa, removing its stamp of certainty.

Given these fundamental differences between scientific inquiry and deliberative inquiry it is no surprise that the argumentative standards would be different in each realm. These different standards provide a ground upon which to build an evaluation of contributory factors in the public's overestimation of the controversy of climate science. Additionally, the nature of scientific epistemology and deliberative discourse work in conjunction to augment this overestimation by the public. Arguments that are presented for a scientific audience, or by a scientific rhetor, may be perceived to be subject to a stringent standard of justification than an argument that is presented solely for a political audience, or by a political rhetor. The strict standard of science can cause scientists to hedge their bets about the certainty of climate change science, even when presenting arguments to the public, as the scientists wish to avoid false claims of epistemological certainty. This hedging strategy, coupled with a tendency on the part of dissenters to overstate the uncertainty of climate science helps contribute to the American public's underestimation of the certainty of climate science.[108]

The difference between scientific argument and deliberative argument can be explained in part by Stephen Toulmin's description of differing argument fields. Toulmin distinguishes between field-variant and field-invariant arguments, where field-variant arguments are recognized as valid only by the justificatory standards of a particular field of inquiry while field-invariant arguments are valid regardless of what field they are made in. Scientific argumentation is designed to create field-invariant warrants and so has a more stringent mode of justification. Scientific argument is made through the proposal of theories that are then empirically tested and

[108] Rowland 2008

verified, while deliberative argument relies on justifying action based on uncertain claims. This distinction illustrates why the arguments of the climate change dissenters resonate with a public audience that is familiar with deliberative argument, while the arguments of the assenting group fail to similarly motivate. Using field theory to describe dissenter arguments that arise in science and migrate to politics elucidates the methods that they use to sustain their criticism of political and scientific justifications for change. In "Purpose, Argument Fields, and Theoretical Justification" Robin Rowland argues that field theory's relevance lies in a description of overlapping fields as they relate to a specific controversy. Rowland touches on the ways that the political and scientific fields interact in the climate change debate as he sees the language used as an outgrowth of the assumptions of science as a cooperative enterprise: "In the debate on global warming in the United States, for example, global warning deniers have used very strong language in attacking the theory, while the advocates of the theory largely have responded in the restrained cooperative language of science."[109]

The discursive choices of scientists are part of their collective communicative pattern, a pattern that may serve them well in their field, but one that does not translate well into the field of politics. This is an example of a field dependent argument strategy that is counter-productive when introduced in a different field. Though the consensus scientists are constrained by this norm, the dissenters show no such restraint. Rowland argues that this creates a situation where argument fields themselves compete for dominance, with their product being epistemically useful information. The conflict that occurs is between the doxa of the dissenters and episteme of the assenters, but because the argument takes place in a deliberative forum, appeals to episteme are unfounded.

[109] Rowland 2008, page 247

The different epistemological foundations of science and deliberation are reflected in the discourse of the different fields. The second difficulty that consensus science on climate change faces is the public understanding of what science is and what it does. Specifically, the public understanding of the controversy is filtered through the common understanding of the role of science as dissent. The appeal to consensus is understood as belonging to the political, not the scientific process. Skepticism and dissent are institutionalized into the very fabric of science. P. Boffetta et al. note that "skepticism, not 'consensus building', is intrinsic to the scientific ethos… science is not advanced by committee—only policy and politics are. Consensus is, at its core, a political process."[110] G. Thomas Goodnight elaborates on the distinct role of public deliberation arguing that it "is inevitably probable because the future is invariably more and less than expected… public argument is a way to share in the construction of the future."[111] The insertion of scientific argument into the public sphere creates a need for arguments that negotiate the differing standards of justification that are used in each sphere. The dissenters highlight the scientific nature of dissent as a way to access the understood requirement that science provide certainty in its argumentation. This reliance on empirical and observable data is used by dissenters such as C. Idso and S.F. Singer as a justification for further study and better models, as they do not correlate with the recorded temperature data.[112] Though seemingly science specific this indict functions well in a public sphere where the interlocutors are accustomed to the presentation of scientific evidence as meeting a higher standard of certainty.

The theoretical basis for explaining and understanding deliberation is fundamentally at odds with the scientific method and its generation of disclosed truths. This epistemological conflict between doxa and episteme is played out in the public debate over climate science.

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[110] Boffetta 2009, page 678
[111] Goodnight 1982, page 214
[112] Idso & Singer 2009

Assenter scientists understand their statements in the public sphere through the lens of the rigorous justificatory standards of science and so when relating information do so in a way that is weaker than a deliberative argument would be, given the same evidence. The dissenters benefit from this epistemic conflict in two ways. First, they are unconstrained by the norms of science, and embrace fully deliberative rules that make them more effective in the public sphere. Second, dissent appeals to popular understandings of science as free and open-ended inquiry that is tightly connected to empirical justification and not solely theoretical proofs.

III. The Practice of Climate Change Dissent in the Public Sphere

In the practical exercise of public argumentation over climate change there are two points that guide public understanding of the controversy. First, the public understands science to be a monolithic system of individuals and institutions that are relatively homogenous in their practices and qualifications. This perception of a monolithic science grants the climate change dissenters equal access to the understood legitimacy of science. Second, dissenting groups understand the value of this perception and actively support this idea through their argumentative practices. These two things taken together make it difficult for assenters to demarcate themselves from dissenter science, a position made all the more difficult given the media's treatment of the issue.

As a practical matter, the arguments on both sides of the climate change issue are filtered through a limited public understanding of not only the scientific process, but also the specifics of climate science. A survey report in July 2009 from The Pew Research Center for the People & the Press report that just 65% of respondents could point to carbon dioxide as a potential greenhouse gas, and only 49% of the public thinks that the earth is getting warmer due to human activity. Despite this poor knowledge of specifics the survey report describes a public that has an

overwhelming support for the scientific process and for scientists, with 84% of the American public agreeing that science has a mostly positive effect on society. This respect for science, but lack of knowledge about specific issues has both shaped and been shaped by the state of the climate change controversy and its treatment in the public arena by politicians and scientists. President Bush in particular took advantage of the public's respect for science, calling for "sound science" on climate change. The climate change dissenters use a number of argument strategies that work in conjunction with the public understanding of science as a monolith, including reflecting the scientific practices that the public recognizes as scientific such as holding conferences and even the design of their webpage.

In "Obscuring the Facts: The Bush Administration and the Politicization of Science in the Greenhouse Debate," E. Panetta describes several methods that the Bush administration used to create a perception of controversy over the science of climate change where none existed. Many of these tactics relied on the understanding that all science is equal. One such method was to call for "sound science" to supplement the findings of the IPCC. This strategy relies on an implicit public respect for the scientific enterprise and a belief that scientific argumentation is supposed to provide certainty; if the science is uncertain then it isn't sound. This phrase has its roots in the tobacco controversy, as it was used by tobacco companies to support further research on the health hazards of environmental smoke. In fact, the Advancement of Sound Science Coalition was formed in 1993 with the purpose of debunking the risks of second-hand smoke.[113] The "sound science" mantra has not disappeared with the election of a new administration. During a hearing regarding the Obama administration's policy on global warming on December 2, 2009 Representative James Sensenbrenner's echoes the call for "sound science." Sensenbrenner argues that we need to have a system that is accountable to the public and open to debate.

[113] Hertsgaard 2006

Ironically he attacks the politicization of science arguing: "When the science itself is politicized, it becomes impossible to make objective political decisions. Scientific policy depends on absolute transparency."[114] Focusing on transparency in the creation of science policy and the data that it relies on, Sensenbrenner inserts the idea that all views should be aired before reaching a scientific decision. Sensenbrenner calls for a "transparent scientific debate" as a way to access the value of sound science policymaking that has been articulated as a benefit to relying on the experts and rearticulates it as a problem with the calcified consensus science that he seeks to undermine.

The Sensenbrenner example illustrates the power of institutions to dictate the direction of a debate even after they have ceased to control the terms and ground of the controversy. The Bush administration was not the only example of a powerful institution that had a stake in the outcome of the controversy. Powerful economic interests, represented by coal and oil companies recognized from the beginning that they would need to get public opinion on their side if they wanted to avoid costly regulations. In his book The Heat is On, Ross Gelbspan outlines the enormous contributions that went into creating the perception of controversy over the science of climate change. He cites the case of the now defunct Information Council on the Environment (ICE). A creation of coal companies in 1991 ICE's stated goal was repositioning "global warming as theory rather than fact."[115] They selected as their targets "older less-educated men" and "young low-income women" who got their electricity from coal and who resided in districts that had a congressional representative on the House Energy Committee.

The involvement of institutions in scientific controversies is not new in this case. The fight over tobacco featured an army of lobbyists and many of the same critics of climate change

[114] Sensenbrenner 2009
[115] Gelbspan 1997, page 34

science were also critics of environmental smoking studies.[116] In "Learning Public Deliberation through the Critique of Institutional Argument" E. Doxtader argues that this type of institutional control of the public sphere enacts what Habermas calls the colonization of the lifeworld, whereby public deliberation wilts in the face of powerful institutions that define what the public interest is. This occurred during the Bush administration with their efforts to suppress the consensus position and elevate the dissenter position as they prevented public deliberation on climate science. Today, a more perverse situation of institutional control of argument pervades the public sphere as the push for more argument and more debate has become a way to strip public deliberation of its participatory content.

The public's perception of science as generally positive coupled with a limited understanding of the difference between scientist's credentials, let alone sub-fields, creates a situation where the dissenters can take advantage of this view to access the broader scientific ethos. Climate change dissenters deploy a multi-tiered argument strategy that attaches their arguments to the value of science while at the same time undermining the perceived consensus. In Climate Change Reconsidered, prominent dissenters Craig Idso and S. Fred Singer argue that re-examining the evidence for climate change produces different conclusions than the Intergovernmental Panel on Climate Change (IPCC). They use the alternative name Nongovernmental International Panel on Climate Change (NIPCC), a rhetorical choice meant to confuse the casual observer as it creates a sense that these are really just two large organizations of science, both of which represent a legitimate scientific community. Their name also emphasizes their lack of government affiliation, a point they stress in the preface as a way to generate more support among their free market advocates.[117] This free market attitude is

[116] Sachs 2010
[117] Idso and Singer 2009

reflected in their sponsorship as the NIPCC is underwritten by The Heartland Institute whose motto is "Free Market Solutions." There is the additional benefit of establishing their arguments as being outside of the political system, removed from government. This allows the dissenters to rhetorically frame themselves as being outside of the system, despite their heavy support from large multi-national corporations.

In Climate Change Reconsidered Idso and Singer rely on a deep-seated epistemic foundation for scientific inquiry, namely that it is concerned with truth-seeking above all else. They found their critique of the consensus position on the idea that though they are in the minority, only the truth matters. They begin by attacking the empirical observations that underpin the case for action on climate change. They argue that the data that the IPCC has gathered and interpreted can be read as supporting an alternative hypothesis about the sources of climate change, separable from the actions of humans. By appealing to the scientific instinct for certainty, they can sustain their critique even in the face of a democratic consensus. Historically, there have been many examples when the scientific majority has been wrong, while the minority had it right. This history coupled with the preference for certainty means that there is a built-in tolerance for the argumentative strategy of the dissenters.

Though Idso and Singer indict the very establishment that produces the consensus position, they do so in a way that rearticulates the foundational purity of science. They argue that the process of peer-reviewed journals creates blind-spots and is a confirmation of the agenda and interests of the scientists reviewing the articles. This argument cuts at the heart of the consensus claim and invites a debate about what the ultimate goal of the peer-review process is and how it influences the production of useful scholarship. They concede that the ultimate goal should be an unbiased production of truth, but disagree as to how that is achieved. In response to allegations

regarding their own industry funding, Idso and Singer point out that they do not have access to the lucrative government grants and do not accept private funds. Their focus in this regard is in distancing themselves from the government grants that assenters receive. As a further move designed to ingratiate them with the public, they attach themselves to a defense of the least well-off sections of society. They argue that taking premature action on climate change would hurt the poorest communities the most as we deprive them of valuable economic growth to be gained from cheap resources.

Idso and Singer's scientific arguments as well as their plea regarding their neutrality are designed to work best in a deliberative, not scientific, forum. In politics the interests of the audience are much more important in justifying decisions than in the field of science. Idso and Singer engage these interests by arguing that climate change legislation would be detrimental to the economy, in particular for the poorest sections of the country. They emphasize that the uncertainty of the science is itself a justification for a lack of action in the political arena. Though there is some harm that may come to other sections of the world, the effect that reform could have on the United States economy is enough to de-justify it, argue Idso and Singer. They rely on a nationalist impulse when evaluating the American public's likely reaction to climate change reform that has a lopsided effect on the United States' economic growth. Incidentally, this was also a key point that Glen Beck makes in his A Climate of Fear when talking about the Kyoto protocol. This argument has a high degree of salience with the public as a recent Rasmussen Report poll showed 45% of respondents worried about the conflict between economic growth and action on climate change.[118] The argument strategies of the dissenters are designed to maintain the status quo, though they do so with dubious reliance on uncertainty on the one hand and certainty on the other. They question the certainty of the science that proves anthropogenic

[118] Rasmussen Reports 2010

climate change but posit certainty when describing the economic consequences of action to forestall the consequences of that change.

The strategy of identifying a conflict between economic and environmental issues is also a central component of dissenters' argument for scientific credibility. Another component of this strategy is the exercise of scientific practices and forms that the public identifies with the scientific edifice. One of those scientific forms is the presentation of their arguments at a conference, specifically the Third International Conference on Climate Change, held in Washington D.C. on June 2, 2009. Though the form of the argument is scientific, the content remains deliberative. In his opening remarks to the conference, Joseph Bast articulates a political argument against action by arguing: "trying to 'stop' global warming by reducing carbon dioxide emissions in the United States is a fool's errand. Our reductions will have virtually no effect on the world's climate, but it will have a devastating effect on the nation's economy, on manufacturers, and on the poor."[119] The probable outcomes on the nation's economy are at the heart of their political argument, but fundamentally it rests on undermining the certainty of climate change. It is irrelevant if lowering emissions would devastate the economy if we have no choice in the matter, and Idso and Singer recognize that. The packaging of political argumentation as scientific is designed to increase argument circulation within the deliberative sphere as the dissenter's rely on the historic scientific ethos.

In practice, the public evaluation of this controversy is shaped by the limited understanding of science and scientific reasoning that pervades the public sphere. There are two important points to consider regarding the public understanding of science as a monolith and that perception's relationship to the climate change controversy. First, climate change dissenters use this limited understanding as a way to justify a call for "sound science," which is simply a

[119] Bast 2009

euphemism for more study into the problem as a way to delay any solution. The "sound science" mantra was a part of scientific dissent during the tobacco controversy over second-hand smoke as well. The second point is that dissenter argumentation in the public sphere has an implicit understanding of science that is aligned with the traditional notion that science is an empirically based form of inquiry that discloses truths about the world, but is largely not speculative. This strategy, combined with the use of the name Non-Governmental International Panel on Climate Change provides the main dissenter organization a level of scientific legitimacy that would be unavailable were it not for the public's limited understanding of scientific practice. The increasing use of digital media and the even-handed approach that large news organizations take in reporting the controversy magnify the effectiveness of these argument strategies.

IV. Media and the Climate Change Controversy

The next consideration for how the arguments of the climate change dissenters are promulgated through the public sphere is their treatment by the media as well as the media sources to which the public goes for information about the climate change controversy. Two considerations about media are important for the assessment of the controversy. First, the mainstream media covers the issue from the perspective of journalistic balance, which actually creates an imbalance in reporting of the dissenter position,[120] increasing perceptions of controversy. Second, the public is increasingly turning to electronic forms of media, which afford the dissenter community the opportunity to represent themselves as part of the scientific edifice.

Press coverage of the issue has been characterized by the idea that a controversy exists, generated in part by Bush's successful call for more study.[121] Though the Bush administration

[120] Boykoff & Boykoff 2004
[121] Panetta 2007

no longer controls the institutional debate about climate change; the rhetorical baggage of his administration's position on climate change remains. Additionally journalistic ethics promote the reporting of a controversy when the issue has two sides. Journalists are trained to give each side equal time in their reporting, as a way to be fair and balanced. This structural allotment may also explain why, despite overwhelming consensus in the scientific community, to this day press coverage of the issue upholds Bush's contention that the debate is far from settled. The presentation of uncertainty undermines the public's belief in the ability of science to provide answers[122], with 52% of Americans believing that there is significant disagreement in the scientific community over the cause of climate change.[123]

This is especially salient when media reports on the issue in the public sphere emphasize the uncertainty of the science and create a public perception of a healthy ongoing debate.[124] In his book Boiling Point Robert Gelbspan explains this phenomenon through the press's commitment to provide balanced coverage of a controversy, which in this case has actually led to an imbalance in reporting on the dissenter's arguments as it creates a larger perception of dispute than exists in science.[125] Additionally, this imbalanced reporting has led the public to believe that there is more uncertainty surrounding the science of climate change than exists in the scientific community.[126] Recent polling data supports these conclusions with 47% of U.S. voters believing that global warming is caused by long-term trends rather than human activity, while only 42% believing that human activity is responsible.[127]

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[122] Nisbet and Scheufele 2009
[123] Rasmussen Reports 2009
[124] Zehr 2000
[125] Gelbspan 2004
[126] Corbett and Durfee 2004
[127] Rasmussen Reports, 2009b

Though this perception by the public is certainly in some part due to the presentation of both sides of the issue in print media, it is also related to the public's reliance on digital media for information and the representation of the controversy online. According to recent polling data 37% of Americans get their news regularly online.[128] The dissenter's appreciation for the role that the look and feel of electronic media plays in the construction of public opinion is typified by the aesthetics of the NIPCC's website, http://www.nipccreport.org/. The website banner features a blue sky filled with clouds and a green pasture with a single large tree. It is similar to the IPCC's website, http://www.ipcc.ch/, which features a blue sky with only a few clouds overhead. Both websites favored color is blue as if to symbolize the sky unsullied by climate change whether real or imagined. Though the IPCC website is appreciably more professional, the NIPCC achieves the goal of providing a window into the electronic media that is available for those interested in the dissenter position. There is an electronic copy of their central document, "Climate Change Reconsidered" readily available (more easily accessed than the 4th Assessment report on the IPCC website) as well as a number of links to video from a press conference organized around the release of the report. There is the sense that the power of electronic media is not underestimated by the NIPCC.

The design of their webpage is not the only way that dissenters take advantage of new, efficient forms of communication. A recent controversy over a pivotal piece of data arose on November 20, 2009 due entirely to the use and perhaps misuse of electronic media. An email server at the University of East Anglia's Climate Research Unit (CRU) was hacked and emails were made public that made it appear as if the consensus position being supported by the researchers there was a product of disinformation. The issue with the email messages revolves around the deletion of original data that was used to support some temperature graphs as well as

[128] Pew Research Center for the People & the Press 2008

the use of a "trick" by Phil Jones, a climate researcher at the East Anglia CRU, to "hide the decline" in temperatures using proxy sources.[129] The controversy centered on the generation of the now ubiquitous "hockey-stick" graph, the one displayed by Al Gore in An Inconvenient Truth as a matter of fact. A noted climate skeptic Patrick J. Michaels represented the scandal by saying "This is not a smoking gun; this is a mushroom cloud"[130].

Not surprisingly the uptake of the controversy over the alleged emails occurred largely on the web, getting traction in the blogosphere and on YouTube. Blogs and online journals have offered the perfect forum for scientists that cannot get their work published in mainstream scientific journals. The climate skeptics and their supporters have also taken advantage of non-print media on the internet in the form of YouTube videos. A video titled "Hide the Decline" currently has more than half a million views and specifically targets Michael Mann as the alleged progenitor of the "trick" that is spoken about in the emails. The video is set to the tune of "Draggin' the Line" by Tommy James and the Shondells and has lyrics alleging that Michael Mann fudged his data in creating his famous hockey-stick graph.

In addition to the YouTube videos, one reason that the current scandal has had so much resonance with the public is that it builds on a value that has been espoused by the supporters of the consensus position, namely the idea of public accountability. In "Communicating Climate Change: Why Frames Matter to Public Engagement," M.C. Nisbet explains that much of the opposition to Bush's science policy from politicians and academics was that it put politics before science, and when it did incorporate science into policymaking, it politicized it. Nisbet cites John Kerry and his campaign comparison of Bush's distorted view on climate science with the lies surrounding Iraqi WMDs, Chris Mooney's book The Republican War on Science, and Obama's

[129] Tierney 2009
[130] Revkin 2009

speech calling to protect "free and open inquiry" when he announced his science policy advisors as examples of the type of opposition that sprang up against Bush's use of science.[131] A main feature of the Climategate scandal has been the call for increased public accountability, a mantra that has spread from cyberspace into the political realm with Representative James Sensenbrenner's recent comments during a hearing regarding the administration's policy on climate change.

The media's presentation of climate change as an ongoing controversy misrepresents the scientific consensus, but is indicative of the way that the debate has played out in the public sphere. The evaluation of the character of climate change dissent provides some suggestions for evaluating future science policy controversies that take place in the public sphere. First, scientists are notoriously unwilling to state their position in the strong language that characterizes typical deliberation within the public sphere. This unwillingness to confidently assert certainty is an outgrowth of the different epistemic standards in scientific and deliberative argumentation. Second, the public understands science as a monolith which establishes a blanket scientific ethos, regardless of the actual credibility of the argument participants. This perception creates a condition where the debate in the public sphere about qualifications becomes too complex and complicated for the public to sort through. The strategy of reflecting argumentative aesthetics will allow scientific dissenters an easy route to scientific credentials in the mind of the public. Third, the presentation of scientific controversies in the media is unlikely to change, given the preference for reporting both sides of the issue despite the level of scientific consensus. This preference for reporting both sides will likely find its way into other science controversies given that it is based in norms of journalistic reporting. Fourth, the public's use of digital media

[131] Nisbet 2009

sources to obtain news is only likely to accelerate into the future, emphasizing the importance of presenting arguments and content on sites that cater to user-generated content, such as YouTube.

Chapter Four: Scientific Narrative, Dissent, and Intelligent Design

I. The Importance of Demarcation for Science

This chapter is concerned with exploring how climate change dissenters' representations of their place as part of the larger scientific community are embedded in historic scientific demarcating rhetorics. There are two exemplars of this appeal to the scientific edifice. The first is the retelling of a particular version of the story of Galileo Galilei as it pertains to the general project of skepticism. Through the story, dissenters construct themselves as Galileo and the assenters as the Catholic Church that ignorantly persecutes them. The second example is in answering the charge that climate change dissent is no different than other forms of scientific dissent, specifically Intelligent Design Theory. In answering this charge, climate change dissenters invoke empiricism as the strongest form of demarcating rhetoric. Both of these examples derive from the need for climate change dissenters to present what they do as "science," in order to demarcate themselves from the political or religious ideologies to which their science can be put. Ironically, these efforts to mark themselves as "scientific" have unintended consequences, as the media has embraced the Galileo narrative in its own way and the political right has begun a project to associate climate change dissent and support for intelligent design under the rubric of deliberation about science.

In tracing the contestation of the Galileo story in the climate change controversy, this chapter first looks at the dissenter's arguments, stemming from books and articles that have been written by prominent dissenting scientists, in particular S. Fred Singer. His version of the Galileo narrative is used as a justification for more deliberation and relates the project of science as that of skepticism. Second, this chapter looks at the celebration of the narrative by the media and

political operators for whom the significance of the folklore is in its resonance with the American public. Glenn Beck, among others, accuses scientists of ignoring their own history rooted in the skepticism of Galileo. Third and finally, this chapter explores the vehement pushback from the assenter community and their supporters as indicative of the meaning of the narrative for science. They argue that the argumentative strategies of climate change dissenters are akin to the Catholic Church of the time, shutting out legitimate voices and persecuting those that disagree. The argument turns on who represents the Catholic Church and who represents Galileo never about whether the story *matters* for the contemporary debate.

Intelligent Design Theory is the idea that evolution cannot be the correct explanation for how life has come to be in so many diverse forms and that therefore an intelligent being, or designer, must have created life in at least some form. In the exchange between climate change dissent and the controversy over Intelligent Design Theory (IDT), Richard Lindzen, Alfred P. Sloan professor of Meteorology at the Massachusetts Institute of Technology, is tasked with defending climate dissent from the charge of complicity with IDT and does so in two ways. First, he engages in a defensive strategy of dissociating the link between the two. The way that Lindzen implicitly identifies the method of justifying science makes climate change dissent and IDT incompatible because climate change dissent relies on the premise that only empirical findings can lead to certainty while IDT is a theory of speculation. The second strategy that Lindzen employs is associating consensus climate science with IDT. He goes about this in the reverse way that he dissociated climate dissent from IDT; he argues that the two theories are compatible given that they are both speculative.

While in the past, climate change dissenters may have found the political right to be allies of convenience, there is an ongoing endorsement of Intelligent Design Theory and climate change

dissent by political and legal actors as a linked cohesive strategy of skepticism. This interplay of association and dissociation is an excellent opportunity to examine the intersection of scientific and political expression. From the scientific perspective of the climate change dissenters, entangling themselves with a particular political ideology has at times allowed them greater access to decision-making arenas, but now may cause them to be attached to other scientific projects of the right that climate change dissenters find antithetical to their overall beliefs, such as Intelligent Design. As a component of an integrated political strategy, adopting a dissenting attitude towards climate change science and evolutionary biology makes perfect sense as each represents a threat to a larger political ideology and can be packaged together as a push for deliberation about science.

II. Galileo, Dissent, and Scientific Identity

This chapter's application of the themes and importance of the Galileo legend will proceed in three parts. First, it will examine the different versions of the story that are told by climate change dissenters and identify some of the common themes of the dissenters' reading of the story. Second, it will look at reads of the Galileo legend that are in line with some of the themes that the dissenters lay out, coming from political allies of climate change dissenters but not primarily the dissenters themselves. Third, the chapter will discuss the assenters' reaction to the reading of the Galileo legend by the climate change dissenters and the contestation of the narrative by the opponents of dissenters. The purpose of the Galileo legend in demarcating science from other forms of inquiry will be explored throughout this chapter.

In "The Galileo Legend as Scientific Folklore," T. Lessl examines forty treatments of the Galileo story by texts with a social and academic orientation. Three central ideas guide Lessl's examination of the Galileo legend. First, Lessl argues that the Galileo legend and the specific

themes that characterize its telling are not mere coincidence but are rather integrated into the community of science. Second, factually incorrect beliefs about history are inevitable amongst a diverse array of groups, and science is no exception. He explains the usefulness of the Galileo narrative in demarcating science from religion and establishing the moral and epistemological purity of science. Third, the telos of retelling the Galileo story lies in the need to shore up the "moral distinctiveness"[132] of science. Lessl identifies five themes that run through the various versions of the Galileo legend, many of which are relevant for its contested status in climate change science. The first theme is the idea of "the scientist as martyr."[133] Lessl argues that this theme is representative of versions of the story in which Galileo's scientific line is traced through Bruno and Copernicus, where the story outlines that Bruno was burned at the stake for his belief in the Copernican worldview. In the story Galileo escapes death but is still punished by a vengeful religious institution. The second theme is that of "Galileo as the founder of modern science,"[134] and incorporates the idea into the story that Galileo marks the beginning of true scientific inquiry. This theme serves to cleanse science of any responsibility to society for its creation, but also to demarcate it from religious institutions. The third theme is that of "Galileo against the church,"[135] and is comprised of stories that prefigure the conflict between Galileo and the church as the inevitable result of religion's antagonism towards science. The fourth theme is the notion of "disinterested science, interested religion"[136] which comes from stories that foreground the epistemic conflict between the church and science, with science cast as the neutral pursuer of knowledge and the church as a faith-driven, ossified institution that prevents free inquiry. The fifth and final theme is the understanding of "the Church as anthropocentric"

[132] Lessl 1999, page 148
[133] Lessl 1999, page 150
[134] Lessl 1999, page 152
[135] Lessl 1999, page 154
[136] Lessl 1999, page 156

which usually comprises a fallacious account of Copernicanism's opposition to the Church's belief that humanity is at the center of the universe and Galileo's demonstration of the Church's folly. Not all five themes are a necessary feature of any one telling of a Galileo narrative; rather they are commonly associated with various versions of these stories and show up frequently when they thematically serve a purpose in distinguishing science from religion.

The most prominent invocation of the Galileo legend by climate change dissenters comes from S. Fred Singer. Singer is a prolific climate change dissenter, having written many articles and several books that argue against the IPCC report.[137] He was also instrumental in the organization of Nongovernmental International Panel on Climate Change (NIPCC) a group dedicated to countering the IPCC reports on climate change.[138] In the first chapter of their book, Unstoppable Global Warming: Every 1,500 Years, Singer and D. T. Avery compare the scientific consensus on climate change to the consensus that Galileo Galilei encountered in his time by saying "There is no 'scientific consensus' as global warming advocates often claim. Nor is consensus important to science. Galileo may have been the only man of his day who believed the Earth revolved around the sun, but he was right!"[139] Singer and Avery's invocation of the Galileo legend is relatively short but packs an enthymematic punch. They specifically rely on at least two themes of the Galileo legend that Lessl identifies. First, the theme of Galileo as the founder of modern science is present in this quotation. Lessl cites prominent examples such as Einstein and Stephen Hawking that apply this quality to Galileo as they relate the story to their audiences.[140] Singer and Avery rely on the audience's understanding of this theme, as they argue that the Galileo legend illustrates that consensus is not important to science. Singer more

[137] SEPP
[138] NIPCC
[139] Singer & Avery 2007, page 6
[140] Lessl 1999

strenuously asserts this claim in an Op-Ed piece in the New York Sun arguing that scientific consensus is "not how science works… every advance in science has come from a minority that found that observed facts contradicted the prevailing hypothesis. Sometimes it took only one scientist; think of Galileo or Einstein."[141] Here, Singer even invokes Einstein as a legend that proves the skeptical rule, arguing that dissension is the only method for scientific advance, positioning scientific consensus as always in the way. Though in the Op-Ed piece Singer says that "consensus is not how science works,"[142] he doesn't explain how science *does* work, or what its conditions for success are. It is in his book with Avery that we get the definition of science as "the process of developing theories and *testing them against observations* until they are proven true or false."[143] This definition exemplifies the fourth theme that Lessl identifies, namely that science is disinterested, disconnected from emotion and connected only to the truth of the matter and our observations of the world. This theme is one of the ways that the Galileo legend serves its crucial function of demarcating science from religion, as it represents science as objective while religion is subjective.

These and other common themes also make an appearance in the comparison between climate change dissent and the skepticism of Galileo that has been promulgated by both mainstream and internet news sources. The Galileo narrative has been appropriated by political forces that wish to use the arguments of climate change dissenters as a warrant for inaction on the climate issue. An article in the American Thinker, a daily internet only publication with a distinctly conservative orientation, by J. J. Schmitt, strenuously asserts the connection between Galileo and contemporary climate dissenters. Schmitt also heavily proscribes an inquisitorial and religious motive behind assent to the IPCC report and the challenge of dissenter argument. After

[141] Singer 2007
[142] Ibid.
[143] Singer & Avery 2007, page 6, emphasis in original

relating his version of the Galileo legend, complete with a description of the threat by the Inquisition to torture Galileo, Schmitt says "*modern inquisitors*, replete with Supreme Court rulings, brand "deniers" of impending apocalyptic global warming as *heretics* who lack blind *faith in the theology* of infallible computer models."[144] This description of the "inquisitors" with their presumably religious motive to preserve the "faith" in computer models by branding the "heretics" is clearly an extension of the aforementioned theme of demarcating science from religion. By associating the assenters with the inquisitors that persecuted Galileo, Schmitt's telling of the narrative is cut from the same cloth as other scientific accounts of the legend; it simply gives a new role to the antagonist. Lessl identifies two resilient threads that are consistently woven into various accounts of Galileo as a way to further demarcate science from religion. First, the idea that scientists are martyrs,[145] clearly represented here by the reference to branding heretics, and also in Schmitt's telling of the Galileo story itself when he says that Galileo "escaped being burnt at the stake"[146] only after re-canting his views on the construction of the solar system. Second, the conflict between Galileo and the church as a defining moment for science[147] is prevalent in this narrative and others. Schmitt's reference to Galileo escaping death at the hands of righteous inquisitorial squads also establishes the moral superiority of science, something that the public and the scientific community will have been socialized to recognize in the telling of the story. He actuates these common understandings of the narrative and uses the positive feelings associated with Galileo directly when he refers to "today's Galileos… being threatened with loss of their positions, credentials and titles."[148]

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[144] Schmitt 2007, emphasis added
[145] Lessl 1999
[146] Schmitt 2007
[147] Lessl 1999
[148] Schmitt 2007

These scientific and political versions of the Galileo story rely on invoking many of the themes that are important in demarcating climate change dissent from other non-legitimate epistemologies. Singer and Avery rely heavily on their audience understanding the theme of Galileo as the founder of modern science. They make the even stronger claim that it was Galileo's skepticism that was responsible of this epochal shift in knowledge. Schmitt's account of the story differs from Singer and Avery's in that the number and richness of detail is expanded, and Schmitt relies more heavily on the understanding of the story as demonstrating the conflict between science and religion, and the danger for society if religious institutions are allowed to destroy science. It is no surprise that one of the examples of heroic skeptics that Schmitt cites in the article is Charles Darwin. These versions of the Galileo story are all about general climate change dissent, but the next version of the story is told in reference to a specific event, the Climategate scandal.

The Climategate scandal involved a set of emails that were hacked from the University of East Anglia's Climate Research Unit and made public in November of 2009, sparked the invocation of the Galileo legend as a metaphor for the content of some of the emails. In an Op-Ed piece in the Wall Street Journal on December 3, 2009, D. Henninger argues that "The East Anglians' mistreatment of scientists who challenged global warming's claims…evokes the attempt to silence Galileo. The exchanges between Penn State's Michael Mann and East Anglia CRU director Phil Jones sound like Father Firenzuola, the Commissary-General of the Inquisition."[149] Henninger's comparison of Mann and Jones to Father Firenzuola is quite a bit more specific than most versions of the legend, relating to only those most familiar with the story. Firenzuola wrote Galileo's abjuration that he read at the conclusion of his trial recanting

[149] Henninger 2009

his belief in the Copernican system[150] and is the chief antagonist of the Galileo legend. Firenzuola represents the power of the Catholic Church to impose its will on scientists that disagree with its overarching view of the universe. Henninger continues with his understanding of the symbolism of the Galileo narrative: "For three centuries Galileo has symbolized dissent in science."[151]

Before moving on to the contestation of these interpretations of the story the last example of dissenter use of the Galileo narrative to discuss is Glenn Beck's reference to the legend on his December 14, 2009 show. Beck invokes the history of Galileo, if wrongly, saying

> …you would think that the scientists would understand their own history. The climate cult is just as much of a state sponsored religion now as the actual state sponsored religion was back in the dark ages, punishing Galileo and locking him in a tower for his opinions. And they're once again locking away the dissenters in a tower of fear, harassment, and an atmosphere of discrediting…[152]

Beck's call for the scientists to "understand their own history" illustrates the power of the narrative in the socialization of science and the perceived power in invoking the legend in defense of climate change dissent. Beck makes an explicit reference to the assenters as a "state sponsored religion" leaving nothing to chance or audience interpretation. Ironically, Galileo wasn't locked in a tower, but was put under house arrest, so it is actually Beck that misunderstands history, though he does successfully invoke some of the common features of the narrative. Beck's description of Galileo relies heavily on the audience seeing the conflict between Galileo and the Church and also seeing scientists as martyr, but more than that he lays out the importance of controlling how the narrative is applied to the current climate change controversy. By making it an issue of understanding scientific history, Beck reorients the

[150] Finocchiaro 2007
[151] Henninger 2009
[152] Beck 2009

controversy to be one of scientific identity. If the identity of science is on the table in correctly applying the narrative to their side of the debate, then the stakes are very high indeed.

The high stakes nature of the game being played out in controlling the direction of the narrative is recognized by the supports of the IPCC. In applying their own interpretation of the legend, the assenters invoke much of the same thematic structure as the dissenters; they agree with the narrative's force but disagree with its application. As reported in the Canberra Times, Peter Coaldrake, vice-chancellor of Queensland University of Technology and chairmen of Universities Australia, implies a comparison between climate change dissenters and the church that prevented Galileo's views from challenging orthodoxy. Coaldrake says: "Science and research fail to gain traction if they question orthodoxies or suggest behaviours might have to change or suggest uncomfortable trend."[153] For Coaldrake, it isn't the nature of the scientific debate that is important in the Galileo story, but the willingness of the community at large to accept a change in their traditional worldview. This telling of the Galileo legend figures Galileo not as skeptic of science but rather skepticism against conventional wisdom. Science here is prefigured as the savior that will demonstrate the folly of current, unscientific knowledge, a savior that we fail to listen to at our peril. Kevin Rudd, the Australian Prime Minister weighed in during a debate on the floor of the Australian parliament arguing, "I'm constantly stunned. It's as if we're back into the trial of Galileo…arguing somehow that the science is fiction…'I mean we are back almost in a medieval court."[154] Though Coaldrake and Rudd give their own versions of the story, it is more about presenting a challenge to the dissenters' interpretation of the legend than it is about a lengthy analysis of the specifics. They don't give an account of the depth of importance that the legend has for science and how society understands science's role. A more

[153] Canberra Times 2010
[154] Rudd 2009

thorough examination of the legend and its relationship to climate change dissent can be found in Chris Mooney's book The Republican War on Science. Mooney takes up the issue of skepticism and Galileo, arguing:

> …not every skeptic is necessarily a Galileo… science also has a place for the accumulation of knowledge and the acceptance of consensus conclusions that have themselves emerged from a process of exacting interrogation and challenge, which is precisely what today's "skeptics" on climate change and ozone depletion refuse to do. Their blanket skepticism renders them unwilling to accept the current state of scientific understanding, no matter how solid.[155]

For Mooney, science is not just about the epistemological skepticism that the method of inquiry implies with its demands for repeatability and observational verification. Rather, the epistemological status of science is at stake in the debate over the Galileo story, whether or not science can produce knowledge at all that can justify sure and swift action, or whether the nature of scientific inquiry renders its epistemological product unstable. Mooney's reading of Galileo's story relies heavily on the theme of Galileo as the founder of modern science, but not as a scientist that was constantly skeptical, rather one that had a particular truth to uncover. The shift from method to product articulates science as a discoverer of truth. Mooney specifically makes this claim regarding Galileo's role in the current climate dissent in his specific reply to the Henninger piece, he argues: "there are quite a few things Henninger is forgetting about Galileo… The people who dissented in the history of science, but were overwhelmingly *wrong*, tend to be forgotten. Galileo dissented and he happened to be *overwhelmingly right*…"[156] Mooney replaces the value of science as a method of inquiry with a science valued for its accuracy in making predictions about the world. For Mooney, only history can vindicate or decimate any particular scientific dissenter. This preference for truth reifies the fourth thematic element of the Galileo

[155] Mooney 2005, page 57
[156] Mooney 2009

narrative that Lessl identifies,[157] namely that science is disinterested in a particular political agenda or ideology and instead seeks the truth of the matter first and foremost.

The prevalence of the common themes appearing in dissenter writings, their treatment in the media, and the vociferous response from the assenter community illustrates the power of enthymematic argument in creating a favorable terrain for perpetual controversy. The use and misuse of narrative about Galileo relies on a familiarization with the story and its meanings for science and society. Without this socialization to the legend, climate change dissenter's efforts to rearticulate the story to illustrate the historical foundation of skepticism broadly would fail, and there would be no need for the assenters to respond at all. The dissenters' articulation of the Galileo legend with general skepticism has unintended consequences for the deployment of a narrative by political forces that shares the climate dissenters viewpoints about climate science, but does not share their viewpoint on Intelligent Design.

III. Intelligent Design and Climate Change Dissent

Something that is nearly as contested as the place of Galileo in climate dissent is the articulation of Intelligent Design Theory and climate dissent. Intelligent Design Theory (IDT) proponents argue that life is too complex to have simply evolved into the state that we see today, and so there must have been a designer. The public controversy over IDT revolves around whether or not the theory should be included in school curriculums that currently teach evolution only. The legal issue with including Intelligent Design Theory in schools is that the Supreme Court ruled in Edwards v. Aguillard that any mandate that creationism be taught in schools violated the establishment clause.[158] The legal work-around to that and the currently proposed solution is to link the teaching of IDT and climate change dissent as promoting academic

[157] Lessl 1999
[158] United States Supreme Court 1987

freedom and general scientific skepticism.[159] Climate change assenters have argued that this linkage demonstrates the unscientific nature of climate change dissent, given that they also feel that IDT is unscientific.[160] This accusation by the assenters has necessitated a response from the climate change dissenters, and the most prominent dissenter, Richard Lindzen, has taken up the charge in his keynote address to the Third International Conference on Climate Change. Lindzen uses two primary methods of response to this argument, dissociation and association. He engages in dissociation by defining scientific practice as empirical, and demonstrating that climate dissent is thoroughly empirical while IDT is not, thus rendering the two incompatible. He then goes on the offensive and argues that this definition of science means that consensus climate science is more like IDT as they are both speculative modes of inquiry.

In The New Rhetoric C. Perelman and L. Olbrechts-Tyteca discuss their concept of dissociation as it applies to the conveyance of ideas and the exercise of argument. For Perelman and Olbrechts-Tyteca dissociation is the result of fundamental incompatibility between two concepts and the recognition of this incompatibility, which necessitates the need for a new relationship, and perhaps new concepts to be articulated. They argue that there is a difference between dissociation and simply breaking conceptual links, and that the dissociation of concepts may be the subject of some controversy.[161] The association of climate change dissent and Intelligent Design Theory fits as the subject of considerable controversy. On May 6, 2009 on the show Hardball, C. Matthews was interviewing Tom Tancredo and much of the interview centered on the connection between IDT and climate dissent. Matthews asserts the link between the two:

[159] Kaufman 2010
[160] Matthews 2009
[161] Perelman & Olbrechts-Tyteca 1969

Now, if you say there was no connection between the two ever in history, that there was never any evolution… and if you want to call it "intelligent design," that`s fine with me… If you don`t accept the science, if you discover it, then you are really basing your whole life just on belief. And then you have a hard time dealing with a person like that when it comes to scientific evidence on climate change if they simply don`t want to believe it because they don`t want to look at evidence.[162]

In this description of the link between IDT and climate change dissent, Matthews has articulated science and evidence as being concomitant. To reject scientific evidence is necessary to accept either climate change dissent or IDT. In his keynote address to the Third International Conference on Climate Change, Richard Lindzen, responds directly to the idea that IDT and climate dissent are conceptually linked in this way:

> "…the iconic claim of the IPCC AR4 was that most of the change of temperature over the period since 1954 was due to man… However, once one looks at the argument presented by the IPCC, one readily sees how embarrassing the claim really is. *The argument makes arguments in support of intelligent design sound rigorous by comparison*. It constitutes a rejection of scientific logic, while widely put forward as being 'demanded' by science.[163]

Lindzen explicitly rejects the arguments of the IPCC, arguing that it would defy scientific logic. In this passage, Lindzen is engaging in implicit boundary-work dividing what is acceptable scientific practice from skullduggery. In this case climate dissent is the former while IDT is the latter. This constitutes a dissociational move on Lindzen's part as he breaks the conceptual linkages and also renders the understanding of climate dissent and IDT incompatible. He further explores this line in outlining what the specific problem with the models is:

> What was done, was to take a large number of models that could not reasonably simulate known patterns of natural behavior… claim that such models nonetheless accurately depicted natural internal climate variability, and use the fact that these models could not replicate the warming episode from the mid seventies through the mid nineties, to argue that forcing was necessary and that the forcing must have been due to man.[164]

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[162] Matthews 2009
[163] Lindzen 2009, emphasis added
[164] Lindzen 2009

By undermining the demonstrable nature of the science of the IPCC, Lindzen invokes the standard of replication as the fundamental demarcation between science and other more theoretical forms of inquiry. If the computer models do not accurately describe past warming then they are not a result that other scientists can replicate, at least not without fudging the data in the same way. This assertion allows the dissenters to maintain that they are simply a spirited defense of clear scientific inquiry, and the production of objective verifiable knowledge. Lindzen implies that the work of the assenters in supporting the Intergovernmental Panel on Climate Change's Assessment Report 4 is pseudo-scientific argument construction. He creates an associational link between climate change science and IDT by describing both as being speculative and non-replicable. These forms of association and dissociation are both categorized as boundary-work, or demarcating rhetorics that separate science from other forms of inquiry. This boundary-work establishes a stringent test of needing to be able to replicate the real world through models, something that will be used as a possible justification for teaching IDT in schools by legal advocates of Intelligent Design Theory.

In his book Defining Science: A Rhetoric of Demarcation, C. Taylor argues that science uses a set of rhetorical practices and strategies to demarcate itself from other epistemic communities that also lay claim to knowledge.[165] For Taylor there has been a traditional investigation into the demarcation of science that has followed strictly philosophical grounds, an investigation that has failed to take into account the practice of scientific inquiry. Rhetorical investigation into the demarcating practices enriches the philosophical inquiry by providing a contextual analysis of actual scientific practice and the justifications that scientists use in demarcating what they do from other forms of inquiry. The conflict between the understanding of a necessary form of scientific practice as informed by logical empiricism and the actual

[165] Taylor 2006

practice of science demonstrates a need for supplemental examination of scientific boundary-work. This supplemental boundary work must be sensitive to the rhetorical needs of a given scientific community.

The direction of this inquiry finds its context in examining the relationship between Intelligent Design Theory and climate change dissent. This is similar to the work of T. Lessl in "Scientific Demarcation and Metascience." Lessl examines a discourse of demarcation, the justification of the theory of evolution, and its theoretical effect on the evaluation of arguments in favor of action against climate change. Lessl takes as his artifacts two publications of the National Academy of Sciences, one entitled "Teaching about Evolution and the Nature of Science," and the other "Climate Change Science: An Analysis of Some Key Questions" and takes the explicit boundary-work of the first seriously in evaluating the content of the second.[166] Lessl argues that the first publication establishes a demarcation between science and religion that is founded on the empirical nature of science, pointing out the lack of verifiability of religious doctrine. For Lessl, this document and others like it establish the framework with which the public uses to evaluate science policy controversies, such as the proposed danger of climate change present in the second publication. The implication of a demarcating rhetoric which emphasizes empirical verifiability is that the theoretical evidence for the climate change pales in comparison to the grandeur of the proof that is marshaled to support evolutionary theory. Given that the science of climate change is nowhere near as certain as the science of evolution, demarcating strategies that establish that level of certainty as a baseline for scientific epistemology may undermine the project of climate change assenters. In the end the public may rely on the more familiar and explicit understanding of what constitutes acceptable scientific practice that is constructed by descriptions of the proof for evolution.

[166] Lessl 1999

Potential confusion about the relationship between climate change dissent and Intelligent Design Theory stems from competing modes of presentation. The climate change dissenters attempt to inculcate themselves into the grander narrative of science, as evidenced by the presentation of the Galileo legend and their rightful place as the hero of the narrative. In incorporating themselves into the scientific edifice, they construct their own demarcating discourse in an attempt to bracket off other "pseudo-scientific" practices. A prominent example of this demarcation is by Richard Lindzen of MIT. In his keynote address to the Third International Conference on Climate Change Lindzen situates the assenters as even farther past the point of unverifiable speculation than the proponents of Intelligent Design, as was illustrated above.

A corroborating account of Lindzen's and an illustration of the contested linkage and compatibility of these two concepts can be found in the J.J. Schmitt article. Schmitt sets about demarcating scientific practice much as we would expect, arguing that "Science is accomplished by prediction, observation and measurement. The experimental *results* must be convincing - not the *words* of the theory's proponents."[167] Though he rearticulates a founding narrative of science, Schmitt explicitly rejects that the role of science is in any way rhetorical. For Schmitt, Darwin's discovery of the effects of evolution constitutes one of the great moments of scientific dissent in the history of science as it demonstrated the importance of experimental data triumphing over the consensus view of species diversity. Though Lessl argues that string theory is at "the forefront of theoretical physics"[168] Schmitt turns the example on its head, arguing that because it hasn't demonstrated empirical verification it should be regarded as "on the ropes."[169] Lessl's predictions are realized as Schmitt rigorously critiques climate science as relying on computer

[167] Schmitt 2007, emphasis in original
[168] Lessl 2008, page 83
[169] Schmitt 2007

models that at best provide probability assessments about future climactic shifts without giving us the empirical basis that Darwin's theory of evolution provides.

A different explanation of how science should demarcate itself from other disciplines is provided by the aforementioned Henninger piece. Henninger argues that action against climate change requires the acceptance and commitment to the precautionary principle, which is the idea that we shouldn't engage in practices that have potentially deleterious effects, even if the science underlying the debate isn't certain. For Henninger, this represents the postmodern influence on scientific practice, as it shifts focus from what is observed and known and necessary to what is contingent. This indictment likely would apply to the current tracing of the argumentative practices of scientists as it falls into the same "slippery and variable intellectual world"[170] that science is in danger of falling into with the continuation of probabilistic climate science. Henninger relies on the modernist rationality of the hard sciences as the last bastion of epistemological certainty arguing that if the scientific ethos collapses then "centuries of what we understand to be the role of science go with it."[171]

The political fallout of viewing science as a contingent, probabilistic mode of inquiry may already be appearing. In Louisiana and Texas, the state boards of education now have the right to present both sides of the debate on both climate change and evolution.[172] An article by L. Kaufman in the New York Times provides an analysis of the connection of the two issues from a proponent of intelligent design and from a proponent of evolution. Both agree that linkage of the issues is more than coincidence and that the natural extension of skepticism about science includes other scientific theories as well. This contemporary political deployment of Intelligent Design Theory and climate change dissent rely on articulating both in conjunction with scientific

[170] Henninger 2009
[171] Henninger 2009
[172] Kaufman 2010

dissent generally and the impulse to pursue skepticism and deliberation of science as an end. The outcome of the "metascientific vacuum"[173] that Lessl describes is in fact worse than he might imagine. Opponents of any scientific principle that they disagree with can use the implicit demarcating discourse articulated by climate change dissenters as a basis for pursuing skepticism against all science that isn't founded on epistemologically certain principles. The interchange between the climate change dissenters and proponents of Intelligent Design have put the scientific ethos into flux and demonstrate the danger of an uncritical call for dissent as an end, rather than as a means to end.

For rhetorical scholars this example of a demarcating discourse that goes awry is only one example, and the direction in which the associational link is applied is contested. Evaluating future science policy controversies could include a look at the demarcating discourses as they relate to other scientific disciplines and projects, not just as science demarcated from non-science, but as science demarcated from itself. Additionally, the power of using a version of the Galileo narrative to justify scientific dissent is particularly attractive given its salience for the public and the scientific community. The contentious nature of the narrative in the climate change controversy illustrates that it could become a feature in future science policy controversies. For policymakers and scientists, the Galileo case study demonstrates the power of narrative in constituting an argumentative situation. Understanding the social history of science is just as important for policymakers as it is to understand the technical arguments. The IDT example illustrates the importance using a consistent justification for arguments, as it is likely that the unintended consequences of a demarcation strategy may be far worse than simply avoiding the issue to begin with.

[173] Lessl 2008

Chapter Five: Rhetorical Scholars, Policymakers, and Future Research

I. Summation of Suggestions for Primary and Secondary Audiences

This chapter offers some suggestions for the primary and secondary audiences of this project. Rhetoric scholars that engage in argumentation studies, theorize controversy, or examine scientific rhetoric and science policy will find here an analysis of how the climate change controversy relates to these areas of study. This chapter argues that the traditional understanding of argumentation in the public sphere as understood to be directed at inducing assent needs to be reevaluated, especially regarding scientific controversy. This reevaluation includes understanding the purpose of some argument as achieving rhetorical presence in a controversy, as in the case of the climate change debate. Such a theory of argument does not have the same characteristics that are traditionally associated with argumentation in the public sphere. Regarding deliberation in the public sphere, this chapter argues that it is wise to be cautious in articulating public deliberation with the public good because the climate change controversy demonstrates that deliberation can be derailed by dissident elements bent on perpetual disagreement. Additionally, this chapter argues that a fourth historical epoch of science and technology controversies has begun, an epoch characterized by the alignment of dissident scientists with the military and economic establishment.

The secondary audience of public policymakers, members of the media, and scientists will find here a discussion of a new understanding of science's place in public deliberation. Science has historically demarcated itself from other forms of inquiry by pointing to the objective, certain nature of its products. This demarcation strategy has served it well in securing

the respect of the public, but the climate change controversy demonstrates the dangers of relying on certainty as a foundation for deliberative claims. The representation of science as a source of certainty has allowed decision-makers to shirk their role as the evaluators of uncertain knowledge and defer judgment to the certainty of science, a certainty that cannot be provided on some issues, such as climate change. This deferral serves neither the public good, nor the interests of science. As the products of scientific inquiry are increasingly called into question by new and emerging forms of knowledge brought about by post-structuralism, it cannot retreat behind a wall of certainty. To do so would be to open up the door for science policy controversies to be negotiated exactly as the climate change controversy has been. An acknowledgement of the probabilistic nature of scientific knowledge and its role in public deliberation as only one factor among many is an uncharted path for science, but ultimately a necessary one.

II. Suggestions for Rhetorical Scholars

For rhetorical scholars with an interest in argumentation and theories of controversy, the climate change controversy is a vine heavy with fruit. In understanding the impact of the controversy in this area, there are two key points to consider. First the rhetorical presence of the dissenter's arguments should be understood as an end, rather than as the means to some other end. The purpose of argument need not achieve any other objective than sticking in the mind of the audience as a way to generate controversy. Second, in theorizing controversy and the public sphere, an emphasis has been put on the value of sustaining controversy and deliberation in the face of a declining public sphere. Though valuable, these efforts need to be supplemented with accounts of issues like the climate change controversy to correct for the potential of deliberation to be undermined and controversy sustained indefinitely. Towards this end, enriching

controversy theory with a more robust theory of argument that appreciates the motive for perpetual disagreement will allow deliberative theorists to identify practices that fall under this heading.

The traditional understanding of the goal of an argument is that argumentation is comprised of discursive techniques that allow us to induce the adherence of the audience to particular theses presented for assent.[174] This conception of argument serves us well when the interlocutors are faithfully pursuing deliberation, but not in situations where deliberation is pursued unfaithfully, or as an end unto itself. The rhetorical presence of an argument can be sufficient to achieve an interlocutor's purpose, as in the case of Glenn Beck's film Exposed: Climate of Fear, Beck argues that his aim is that "once you realize how many holes there are in the consensus solution, you may begin to open up your mind to the other side of the global warming debate as a whole."[175] This function of climate change dissent, the psychological weakening of the audience, opening them up to the possibility of uncertainty is the aim of Beck's film. In public argument, it can be enough to simply introduce an argument and have the argument acknowledged as legitimate as a way to sustain the deliberation of an issue. Such is the case with climate change, as there are numerous examples of dissenters presenting their argument solely with this purpose in mind. Glenn Beck introduced his special Exposed: Climate of Fear by saying: "It is the other side of the climate debate that you don`t hear anywhere."[176] In their collection of dissenter argumentation, prominent dissenters Craig Idso and S. Fred Singer express their regret that "many advocates in the debate have chosen to give up debating the science and focus almost exclusively on questioning the motives of "skeptics," name-calling, and

[174] Perelman & Olbrechts-Tyteca 1969
[175] Beck 2007
[176] Beck 2007

ad hominem attacks."[177] In the above cited video response it is ironic to hear Beck supporting the fundamental tenants of a deliberative democracy saying "whether you agree or not with what the other side says, the debate must not only be tolerated; it must be encouraged."[178] These examples illustrate the importance of understanding scientific dissent in the public sphere as an end unto itself, as it establishes doubt in the minds of the audience. If doubt can be achieved then it is unnecessary to gain the adherence of the audience to the substantive theses presented.

Some contemporary argument theorists have begun an effort to move argumentation towards a more contextual and circumspect understanding of argument. In J. F. Klumpp's "Argumentative Ecology" he argues that argumentation should be understood in ecological terms, with a preference placed on describing system-wide interactions, rather than epiphenomenon or individual interlocutors. Argumentative ecology treats arguments as embedded within a complex network of interactions shaping the evaluation of these arguments and also their outcomes. Klumpp argues that we need to move past previous ecological understandings of argument that are grounded in a particular structured institution. For Klumpp powerful institutions shape, though do not determine argumentative outcomes. An ecological understanding of argument requires us to evaluate the various ecological pressures that cause arguments to evolve and adapt to create the most successful species of argument. In the climate change controversy, those pressures surely include the powerful economic interests behind the climate change dissenters, as well as the media, and the residue of Bush administration policies; however those influences were not all of the pressures that shaped the climate that ultimately allowed dissent to flourish. The contribution of controversy theorists cannot be discounted.

[177] Idso &Singer 2009
[178] Beck 2007

Recently controversy theorists have decried the decline in the public sphere and made gestures to open up space for public deliberation. In his 1991 keynote address to the Alta Conference on Argumentation G. Thomas Goodnight says that "the decline of the public as a forum of civil society is clearly visible,"[179] though hope should be retained as generative argument "may erupt even in the face of its own repression."[180] In "Learning Public Deliberation through the Critique of Institutional Argument" Eric Doxtader analyzes the use of econometric analysis in the Exxon Valdez oil spill and found that "interested citizens are not only excluded from the process of defining the value of public goods but are also misled into believing that such issues are outside the boundaries of the public sphere." For Doxtader, how we define "public good" is often decided by institutions, limiting public deliberation on controversies that implicate the public's interest. Though Goodnight laments the decline of the public sphere, he celebrates the ubiquity of controversy saying, "this time of controversy that now envelops our consumer culture, social relationships and institutions, public discourses, interest group politics, professions, academic fields, and intellectual endeavors can be taken as a strong sign that reason and communication are in ferment."[181] For Goodnight controversy necessarily involves deliberation, because "when unspoken rules and tacit presumptions are put up for discussion through clashes among members of institutions, interest groups, fields, communities, and publics, there are new opportunities and obligations to learn, to decide, to argue." Goodnight is implicitly relying on a traditional understanding of argument as a deliberative exchange between two interlocutors where each tries to convince the other of their respective position. Though this understanding of deliberative argument may hold when there is a shared interest in change, it cannot account for obstructionism. There is a presumption among argument theorists that

[179] Goodnight 1991, page 7
[180] Goodnight 1991, page 8
[181] Goodnight 1991, page 6

deliberation works towards a solution and doesn't exist merely as an end. This presumption has been challenged by the climate dissenters and requires us to re-assess the motivations of arguers and the purpose of argumentation.

Science policy controversies and the deliberation that surrounds them are mediated by the relationship of the scientific community to the dominant ideological institutions. This relationship has not always been what it is today, nor will it stay the same forever. In "Ethical Controversies of Science and Society: A Relation between Two Spheres of Social Conflict" R. Collins outlines three different historical epochs of the interplay between science and political institutions, beginning with what he terms the 'Galileo' syndrome.[182] For Collins, this first epoch is characterized by conflict between science and religion, where scientists represent the dissenter community and religion represents established orthodoxy. The second epoch is characteristic of the 1800's and is a period where science is allied with reform movements, but is not necessarily integrated into the political process. For Collins the third epoch is "A period in which prominent segments of science are allied with the military and economic establishment and are opposed by lay movements… in alliance with dissident scientists. This is our own period, which came into existence after 1945."[183] Prominent science in this case refers to the nuclear weapons establishment of the United States, while the dissident scientists were the opponents of science as it supported the nuclear complex. That is where Collins stops his analysis, which in 1993 was witnessing the beginnings of a shift into a new epoch. The fourth historical epoch is now in full swing in the ongoing and ever-evolving relationship between science and society. In the current era dissident science is now in the service of the economic establishment while prominent segments of science are allied with lay movements. The shift from one historical epoch to the

[182] Collins 1993
[183] Collins 1993, page 308

next in the history of science does not follow a revolutionary pattern, but is altogether an evolutionary one. We can point to moments of change that characterize this shift in the tobacco controversy of the 1960s, where scientists aided the tobacco companies in fighting the science of second hand smoke, the ozone depletion dust-up in the 1970's, where scientists were called in to "debunk" the connection between chlorofluorocarbons and the ozone hole, and the current climate change controversy.[184] The most recent moment in this shift occurred during the Bush administration, ushered in with the release of Al Gore's An Inconvenient Truth which firmly established a lay movement on the side of mainstream science. The increasingly global nature of science has also played a role in this shift and may sustain the current epoch for some time.

III. Suggestions for Policymakers and Scientists

For public policy makers, the media, and the scientific community, the lessons learned from the ongoing climate change controversy are manifold. Two ideas are paramount in understanding the impact of the climate change controversy on the relationship between science and policy deliberation. First the epistemological foundation of scientific inquiry is understood as resting on certainty. This frames scientific argument within the public sphere and devalues any scientific argument that doesn't rely on the traditional support of objective truth. This is reflected in scientific discourse about science as well as popularized media sources. Second the use of demarcating rhetoric in establishing boundaries between science and religion affect the evaluation of scientific argument that is not directly involved in the demarcating discourse. These demarcation strategies spill over into controversies where scientific justification does not meet the tests established by the demarcating discourse. These unintended consequences of the rhetoric of demarcation are indicative of our continuing march into a postmodern age of argument evaluation, where scientific justifications are becoming integrated into public

[184] Sachs 2010

deliberation. The extent to which that integration is a smooth one will determine if future scientific controversies operate similarly to the climate change controversy.

In Science, Truth and Democracy P. Kitcher defends a view of scientific inquiry as one that is aimed at producing objective truth claims that are disconnected from ideological or rhetorical concerns. At the same time, Kitcher hopes to reconcile this view of science with its role in a democratic society, particularly one that holds divergent views on what the object of science should be. Kitcher argues that we should view deliberation about science as a family that has to make a pivotal decision. He envisions a set of "ideal deliberators" that have no particular interest in the outcome of a decision about what scientific projects should be pursued, and are comfortable being swayed by unassailable data. In the event that there is disagreement over the outcome of a particular deliberation Kitcher argues we can simply factor the amount of agreement that is shared into our calculations into what the optimal public good is. This allows a probability calculation in the form of a statistical comparison between different scientific endeavors as well as providing a foundation for what science policy should be pursued.

Unfortunately, Kitcher's account of deliberation is several steps behind an analysis of the praxis of American democracy and the influence of public argumentation on science policy. In the case of climate change powerful economic institutions have a vested interest in the maintenance of the status quo and so insert themselves into the public controversy in a way that reflects their interests.[185] Additionally, the probability calculation that Kitcher suggests is precisely what climate change dissenters have in mind when they present the other side, as the mere perception of disagreement in the scientific community has been prefigured in the debate as preventing movement forward on a political solution, even a solution that took probability into account. Another problem that Kitcher's analysis has for assenters' arguments on climate change

[185] Gelbspan 1997

in the public sphere is that it relies on an assumption that science produces objective facts that are certain. This assumption is what allows much of the dissenter's technical argumentation to retain traction in the public sphere, as they rightly point out that climate science is not an entirely observational science. In an article in Slate Magazine, Daniel Sarewitz argues that a Kitcher-like focus on scientific precision and certainty is part of the problem in the public understanding of climate science, as there is a surplus of science and a dearth of deliberation, a gap that is only getting bigger; he says "political progress on climate change requires not more scientific input into politics, but less. Value disputes that are hidden behind the scientific claims and counterclaims need to be flushed out and brought into the sunlight of democratic deliberation."[186]

The sunlight of democratic deliberation is overshadowed by the historic attempts of science to distinguish itself from the uncertainty of deliberation. In Defining Science: A Rhetoric of Demarcation, C.A. Taylor argues that science and scientific practice are constantly in flux, redefined when they come into conflict with a practice or a system of practices that challenge their epistemic authority.[187] For Taylor science is not a stable fixed system with a metaphysical nature that is reflected in its rhetorical practice. Rather, science uses strategic rhetorical practices to demarcate itself when it is under threat. The challenging discourse is part of the rhetorical interplay that characterizes the creation of a new operational definition of science. In "Ethical Controversies of Science and Society: A Relation between Two Spheres of Social Conflict," R. Collins comments on the creation of an ethical distinctiveness for scientific practice. Science constructs this distinctiveness by espousing the pursuit of an objective Truth as the ethical ideal. Collins relates this pursuit to the transcendental worldview ascribed to by religions the world over. Unlike Taylor, for Collins the pursuit of this truth is an ethical, and not an epistemological

[186] Sarewitz 2010
[187] Taylor 1996

one. This in part explains why even in the face of postpositivist or antifoundationalist criticisms of science, the ideal of an objective truth has not been abandoned.

A specific instance of demarcating strategies is cited in T. Lessl's "Scientific Demarcation and Metascience: The National Academy of Sciences on Greenhouse Warming and Evolution." Lessl cites a small book published by the NAS which engages in explicit boundary-work differentiating science from religion. The publication argues that science is distinct from religion because science uses empirical tests of knowledge that lead to a high degree of certitude. These demarcating strategies have left a residual rhetorical presence in the climate change debate, as publications like the NAS document are commonplace as tools to teach society about what it is that science does. The dissenters have taken advantage of this understanding of science as needing certainty to be justified in producing results, and have crafted their arguments accordingly. Idso and Singer argue that "scientists working in fields characterized by complexity and uncertainty are apt to confuse the output of models—which are nothing more than a statement of how the modeler believes a part of the world works—with real-world trends…"[188] as a reason for dismissing the conclusions of climate science.

The complexity and uncertainty of climate science models have more in common with the poststructuralist modes of inquiry that constitute the new threat to science than they do with logical deduction. M. Fagan in "Social Construction Revisited: Epistemology and Scientific Practice" argues that science has traditionally eschewed the idea of reconciling itself with a view of social constructionism as it is anathema to the empirical study of science. This hasn't prevented post-structuralism from mounting new critiques on the scientific enterprise, such as A. Koch's book Poststructuralism and the Politics of Method. Koch argues that there is an epistemological crisis that has been generated through a disconnect between justification in

[188] Idso & Singer 2009, page 22

politics and the methods of current epistemologies, including science. The justification for action is belief, but philosophy and science cannot explain belief. For Koch "poststructuralism operates in the space between the methodological limitations of modern scientific method and the linguistic character of traditional reference points of symbolic communications."[189] Fagan argues that scientific justification is developed in an ad hoc, socially constructed fashion, and so the traditional tension between the scientific method and poststructuralism is not as sharp a line as either the scientists or the poststructuralists would believe. As science negotiates this new debate, "the generative function of rhetorical practice ensures that these types of debates establish social precedents for future controversies, and in the process, come to establish the proper role of science in society."[190] If the response is to retreat back into the comfortable realm of certainty and shore up the walls of positivism then the result could be to clear ground for more dissenters in the future.

IV. Directions for Future Research

There are many possible directions for future research to which this project could be put. First a discussion of visual rhetoric and the role that images play in constructing climate change dissent and assent in analyzing Gore's film, but also more specifically attend to the failure of photographs to mobilize the public would open up new possibilities of analysis. This project was a textual analysis of the film because the central organizing theme of this project is the disjunction between public opinion and scientific consensus and so the examination of Gore's textual arguments took precedence in this case. That does not mean that it would be at all unproductive to engage in a reading of the images of the film, and also those of Glenn Beck as juxtaposed against Gore's film. The second area of discussion that would enrich this project is in

[189] Koch 2007, page 112
[190] Mitchell & Paroske 2000, page 91-92

applying a more rigorous examination of scientific and deliberative epistemology and the ways that the differences between the two constrain scientific deliberators, but also how those differences open up space for more, diverse arguments. The third area for future research is in taking some of the conclusions that have been drawn in the investigation of the climate change controversy and applying them to other scientific controversies to see if they hold. The principles of reflection and incorporation my only apply in situations where a group has an overriding interest in continued deliberation without end, but not in situations where there is a reason to reach a resolution on an issue.

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