

**Engines and Words:
Rhetoric, Inertia, and the Subversion of Climate Science**

by

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BA (hons), Simon Fraser University, 2005

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

In the
School of Communication

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SIMON FRASER UNIVERSITY

Summer 2007

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Abstract

Western society embraces scientific technology, yet we are often willing to disregard warnings issued by the established scientific community. This study is an investigation of this paradox. How, in a society that esteems scientific advancement, may cogent empirical conclusions be trivialized? Addressing the issue of climate change, I examine the discursive strategies by which the George Marshall Institute has attempted to discredit climate science, and thereby encourage public apathy and reluctance in government to implement regulatory policy. This organization's publications are significant because, first, informed civic deliberation depends upon the quality and accuracy of commonly available information, and second, narratives favoured by dominant institutions may profit from broad circulation and uncritical reception. By analyzing the rhetorical strategies deployed by this corporation, I attempt to gain insight into the ways that a broad consensus in scientific research can successfully be portrayed as inconsequential, and then assess the implications of this practice.

Keywords:

Rhetoric, Public discourse, Science, Media, Argumentation, Propaganda.

This paper is dedicated to my parents, without whom I would never have had the opportunity to explore the fantastically beautiful worlds of sound and words.

Acknowledgements

Thank you to those who have supported and encouraged me in my research endeavours, particularly this work. I have intellectual debts to several people who have greatly influenced my thinking: Rick Gruneau, Rick Coe, and Gary McCarron.

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Chapter One. Introduction

Contemporary science traces a compelling link between human activities, particularly those resulting in increased concentration of carbon dioxide in the troposphere, and climate change. However, certain organizations contest this research and strive to foster societal uncertainty regarding its accuracy and significance. One prominent dissenting voice comes from the George Marshall Institute (referred to hereafter as the MI), a Washington D.C. think-tank.

This study examines the discursive strategies by which the MI attempts to subvert climate science, and thereby encourage public apathy and forestall government initiatives to implement regulatory policy. The MI's publications are significant because, first, informed civic deliberation depends upon the quality and accuracy of commonly available information, and second, narratives favoured by dominant institutions may profit from broad circulation and uncritical reception. By analyzing the rhetorical strategies deployed, I attempt to gain insight into the ways that a broad consensus in scientific research can successfully be portrayed as inconsequential, and then assess the implications of this practice.

Rationale

Western society embraces scientific technology, yet we are often willing to disregard warnings issued by the established scientific community. This study is an investigation of

this paradox. How, in a society that esteems scientific advancement, may overwhelming empirical evidence be trivialized?

I begin with the assumption that broad agreement exists within the scientific community regarding the human impact on climate and the threats posed by the climatic alterations. This position is supported by the two most recent (February and April, 2007) reports of the Intergovernmental Panel on Climate Change (referred to hereafter as the IPCC). The Panel was established in 1988 by two United Nations Organizations, the World Meteorological Organization and the United Nations Environment Programme, and was charged with assessing “the scientific, technical and socioeconomic information relevant for the understanding of the risk of human-induced climate change” (“IPCC History”). It publishes a report every five years and these documents, summarizing the work of several hundred scientists from more than 100 countries, incorporate all relevant findings from within the past five years.

IPCC reports are policy relevant but not policy prescriptive; they are designed to inform international political negotiations regarding both the threats posed by, and realistic response strategies to, climate change. On February 2, 2007, the panel released a summary of the findings from Working group I of the Fourth Assessment Report. This is the most current and authoritative summary of scientific literature and understanding of global climate change. It confirms that global warming is occurring, and that “Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentration (“Climate Change 2007” 8). Greenhouse gas concentration results from increased emissions due to industrial processes, fossil fuel combustion, and alterations in land use,

such as deforestation. Here, the phrase “very likely” refers to the probability using expert judgment of over 90% (4).

The MI, in turn, was established in 1984 with a mandate “to conduct technical assessments of scientific issues with an impact on public policy.” The organization’s official introduction states, “Where science is misused and distorted to promote special interests, GMI works to improve the situation” (“George C. Marshall”). This ambition suggests an affinity with the IPCC. But this semblance is false.

The MI has two central projects: advocating creation of a comprehensive U.S. missile defence system, and attempting to discredit climate science. Its arguments directed towards the latter should not simply be equated with scepticism, for this term suggests both the practice of self-reflexivity and the motivation to achieve accurate understanding. This corporation, by contrast, enters the debate with a precise political objective: continuation of current socio-economic practice.

According to a January 3, 2007 report published by The Union of Concerned Scientists, a science-based non-profit alliance of over 200,000 citizens and scientists, “Exxon Mobil has funneled nearly \$16 million between 1998 and 2005 to a network of 43 advocacy organizations that seek to confuse the public on global warming science.” The MI received \$630,000 of this amount (“Scientists’ Report”). Politically motivated funding of this nature is common. The UCS notes that, orchestrated to coincide with the publication of the first section of the IPCC’s Fourth Assessment Report, the American Enterprise Institute (AEI), a think-tank which has received more than \$1.6m from Exxon Mobil, approached scientists and economists and offered them \$10,000 each for essays

that “thoughtfully explore the limitations of climate model outputs” (“Scientists offered”).

It is not my intention to evaluate all current climate science literature. I interpret the IPCC’s conclusions as authoritative, then concentrate on the rhetorical tactics employed by the MI to mobilize doubt in the face of empirical evidence.

Approach

My approach hinges on several fundamental premises. First, all knowledge is contingent. No consensus is definitive. Thus, social debate and collective judgment hinge upon the question: what degree of probability justifies action? Second, within the sphere of environmental debate, such action should be made in light of the best available knowledge and evidence. In the material world, science has a privileged predictive capacity and thus should form the grounds of such decisions. I argue on behalf of public scientific literacy. Third, the art of rhetoric is essential to practical reasoning and collective deliberation. However, due to the provisional nature of ethics and knowledge, language may be marshalled on behalf of ambitions which run counter to the collective interests of broader society. Fourth, media influence public opinion by determining the framework wherein issues are deliberated. The quality of prevalent information thus has direct implications for policy creation.

Public access to optimal information is vital to informed debate regarding policy proposals and their alternatives. There is always a danger that public information does not adequately reflect existing scientific data. One set of interests may be legitimated without appropriate transparency and without due public assessment of the best available evidence.

Two correlated areas of research inform this study: the discursive configuration of civil society, and public discourse about controversial science. Each involves consideration of specific discursive strategies' motivations, operational tactics, and social functions. Because rhetorical terrain expands as grounds of conviction contract, persuasion is ubiquitous in such debate. My theoretical framework thus draws from the fields of rhetoric and discourse studies. Rather than differentiate between these perspectives, I emphasize their shared aspects. Each interprets society as a form of communication. Communication is held to be the creation, dissemination and sharing of meaningful symbols as individuals and social groups; it is the core practice of human experience and one that shapes social, economic and cultural relations. Yet while rhetorical criticism encourages detailed study of specific, purposive action, discourse analysis calls for more thorough consideration of individual texts' relations to broader patterns of social discourse. Their complementary application thus provides for analysis of text/context relations at both micro and macro levels.

These two perspectives are supplemented by the insights afforded by political economy. Through consideration of the influence enacted by existing political and economic structures, I survey the interface between media, public dialogue and policy implementation. Acknowledging the existence of power asymmetries, I aim to articulate and evaluate the discursive construction and operation of power within a specific historical context.

Structure

The paper is organized into six chapters. The first argues the significance of the MI's publications, and the necessity for broad public access to, and comprehension of,

optimum scientific knowledge about environmental issues. It attempts to chart the connections between science, media, public discourse, and policy implementation based upon probabilities.

Chapter two outlines the applied theoretical framework. It examines the relationship between rhetoric and science, articulates central principles of rhetorical and discourse theories, and provides a brief discussion of public sphere theory.

Chapter three examines the MI's attempted appropriation of the authority associated with the scientific method. It explores the MI's definition of science and emphasis on scientific "neutrality". The chapter reveals how the MI's demands for scientific certainty are applied to justify inaction on the issue of climate change. Significantly, calls for further research and open debate serve also to situate its discourse within a proactive, morally ascendant framework. Centering upon the metaphor of inertia, I examine the MI's use of terminology suggestive of pragmatically-informed caution, that which alludes to stability and endorses the continuation of current social practice within an ethical framework of prudence.

Chapter four illustrates the MI's complementary attack on the established scientific community. Public awareness of the dangers posed by climate change is now sufficient to render simple denial of its existence problematic. Indecision and apathy are therefore best encouraged by obfuscating the anthropogenic origins of climate change, largely through the denigration of scientific research. Mainstream climate science is depicted as deficient, as both biased and incapable of predicting future climate variations. Because the MI's broader strategy includes the assertion that science may attain certainty, climate science is depicted as an anomaly, one crippled by the climate system's chaotic

features, and corrupted by politics and emotion. Governmental funding of climate research is equated with the politicization of science, and scientific conclusions, particularly those of the IPCC, are attacked as subjective and thus insubstantial. Last, the environmental movement as a whole is charged with propagating an elitist and irrational orthodoxy. Throughout, the notion of uncertainty is emphasized.

Chapter five assesses the MI's attempt to define the problem domain, and thus frame public debate, within a neo-liberal economic model wherein citizenship is equated with material consumption. If there is indeed a problem, it is argued, the market provides the solution. Here, the concept of emotion is applied towards dual ends. For, while chapter three examines accusations of emotional distortion levelled against the IPCC, equally vital are emotional appeals that support the MI's own position. Central in this regard is the MI's appeal to lifestyle preservation. Depictions of stability and prosperity are equated with current socio-economic practice. This strategy hinges upon the metaphor of progress, and relegates governmental responsibility to a role supportive of entrepreneurial and technological innovation. A health/harm binary is constructed wherein the economy is depicted as guarantor of social well-being while regulatory action threatens to undermine the quality of life. Crucially, this tactic is supplemented by cooptation of sustainable development discourse whereby the MI once again constructs a proactive image while simultaneously reifying the current socio-economic practice. Alternative proposals are thereby obscured and the bases for innovative responses diminished.

The concluding chapter summarizes the paper's central arguments, suggests areas which require further elaboration and research, and advocates for science-based international legislation in response to the issue of global climate change.

Chapter Two. Theoretical Framework

Scientific method

Rhetorical dimensions

The scientific project has an ambiguous reputation in Western society. Central to modern culture, it is both championed as the key to a better life, and criticized in equal measure as an instrument of domination and reductionism. Such critiques have a long history, sustained by, amongst others, the Humanist, Romantic and post-modern traditions. In the Rhetoric, Aristotle differentiates between rational appeals and scientific demonstration (Bizzell and Herzberg 4). The former are portrayed as inherently subjective, while in the latter, facts speak for themselves. Yet, within the discipline of science, subjective decisions are a fundamental component of the search for, and definition of, truth. This derives both from the selection of subject and the ends towards which research is employed. Linguistic and metaphorical choices further enhance the subjective dimensions of scientific communication, both within the discipline, and beyond (as conclusions are translated into information comprehensible to the public and amenable to journalism).

Contemporary philosophy of science defends this pattern of thought. Alluding to the work of Thomas Kuhn, Patricia Bizzell and Bruce Herzberg affirm:

Language is not a clear medium for the exchange of information, but opaque, resistant, imbued with cultural bias, even in the enlightened realm of science. Scientists cannot simply present new information or demonstrate new findings but must argue for new meanings and create a new community that shares them. (916)

The acknowledgment of the role of persuasion in scientific communication concurs with G. Thomas Goodnight's assertion that "science cannot escape its openness to probabilities" ("Science" 26). And with regards to communication to the public, this rhetorical dimension is still further pronounced. Commenting on the debate surrounding evolution versus intelligent design, John Lyne observes that argument is frequently less about empirical evidence than about "origins and mythic grounding, and about the very limits of science, fought out in the space of meanings and beliefs" (38). Jane Gregory and Steve Miller apply the same argument to the sphere of the environment. In such arenas, they claim, "battles are to be won and lost more on emotion than on a disinterested and objective scrutiny of scientific facts" (164). Indeed, the very concept of scientific consensus, the fundamental argument in support of governmental climate-responsive regulatory action, is an explicitly political notion, more closely associated with democratic principles than to any ideal of universal and objective truth.

Further complicating the matter are notions of expertise and interpretive authority. Comprehension of climate science requires a specialized ability to trace connections between broad global and historical patterns. An untrained observer is thus required to either trust the recommendations of prestigious scientific bodies such as the IPCC, or to distrust such organizations' assumed interpretive authority.

Philip Kitcher contests two prevalent images of science. The first claims the practice to be "liberating, practically beneficial, and the greatest achievement of human civilization" (199). The second tends to "deny the objectivity of sciences, question our ability to attain truth and knowledge, and conclude that the sciences are instruments of oppression" (xi).

Each characterization is partially valid. In order to reconcile them, a crucial distinction must first be made between the conceptual, emotional and material worlds. With respect to the first, and within the realm of the material, science may indeed be “practically beneficial,” although its characterization as “the greatest achievement of human civilization” is contentious. With respect to the latter, it is commonly accepted that scientific practice involves a rhetorical dimension; it is thus warranted to “question our ability to attain truth.” However, the inference that sciences are solely “instruments of oppression” is untenable.

Given science’s tarnished reputation as a tool for the domination of nature, it is paradoxical that this same discipline may create knowledge vital to the biosphere’s sustenance. While many of the problems it claims the capacity to solve were initiated by scientifically-informed industrial practice, the fact now stands: science offers compelling evidence that the current status quo is unsustainable. While science is never pure, nor objective, it does promise certain advantages in the context of the material world (as indicated by innovation in the spheres of medicine and communication technology). Scientific method may be employed towards either socially beneficial, or counter-productive ends, and this necessitates a continual appraisal of its claims in relation to ethical considerations.

Scientific practice is most accurately interpreted as the formation of hypotheses based upon probabilistic warrant. Such a model makes science compatible with rhetoric. A pivotal question thus involves the nature of the relationship between science and politics. What degree of autonomy and objectivity are possible? This paper argues that while science is always political, this need not compromise its privileged capacity to

predict and to explain processes within the material world. Accurate communication of scientific evidence is often of great consequence.

Failure to question “authority” or to hold authorities accountable presents a clear danger to any democratic society. But this does not discredit the notion of scientific authority. Any attempt to translate the political dimensions of scientific practice into negation of the discipline’s practical relevance risks obscuring the significance of crucial evidence. I argue that judgment on what constitutes prudent action is always based upon probabilities, and should be made in light of the best available knowledge and evidence. In the realm of environmental issues, science has a privileged predictive capacity and thus should form the grounds of such actions.

Predictive advantages

By seeking to demonstrate the rhetorical motivation of attitude and belief, my approach is embedded in the interpretive tradition. However, in concert with the perspective of scientific realism, I argue for differentiation between better and worse, more and less accurate, discursive approximations of the material world. Hans-Georg Gadamer observes that humans are historical beings whose worldviews are necessarily built upon past experience; thus “all understanding inevitably involves some prejudice” (674). However, within the sphere of science, the ultimate communicative aim remains the construction of a narrative that most closely approximates an original historical process. Towards this end, integration of empirical rigor with reflexive practice allows for the determination of a hierarchy of interpretations along an axis of differential probability while concurrently maintaining awareness of the influences enacted by ideological and power frameworks. To quote Myra MacDonald, it is possible to undertake a

“comparative assessment of discourses along a sliding scale of viability” (18) whereby truth claims may be rationally adjudicated with respect to rationales and evidentiary bases.

I concur with Terry Eagleton’s twin assertions that “Absolute truth has nothing to do with fanaticism” (After 108), and that “It is not the level at which fundamentalism pitches its claims which is the problem; it is the nature of the claims themselves” (191). These propositions are justified if one acknowledges humanity’s irreducible biological commonality. For without invoking metaphysics, it is fair to say that biological death is an absolute truth. From this perspective, substantive and empirically-derived conclusions may on occasion be of great social consequence. And they are integral to informed debate about environmental policy. This does not imply that science can access absolute truth, simply that within any given situation, action should be based upon the best available provisional knowledge.

As noted by Robert Hariman, “The world exists independently of us ... but it only exists to us, and we only act within it, as we interpret it” (182). Still, global climate change is of fundamental significance to all humanity; it is neither relative nor simply a matter of perspective. This acknowledgment requires differentiation between the subjective world of ideas, and the concrete, tangible material world. For while the distinction between fact and symbolic depiction is irreconcilable, the physical world, both as process and discursive reconstruction, has a fundamental impact on lived experience. I thus argue the merits of science literacy and advocacy, each of which influences a public’s capacity to make informed decisions about pressing environmental issues.

This task is of course problematic. Because social and physical contexts determine a sign's connotative field of reference, and thus motivate a particular interpretation in relation to other established signs and practices, there is danger that popular understandings of an issue will be derived from tradition as opposed to consideration of empirical evidence. Of prime importance, then, are the means by which high-quality scientific communication is both facilitated and hindered.

Rhetoric / communication / discourse

All communicative practice hinges upon questions of contingency and probability. Within the rhetorical tradition, this understanding is pivotal. Rhetoric exists within a framework of provisional knowledge and is strategic and purposive. It impels thought and orientation, and affects awareness of possibilities. By directing and deflecting attention (Burke, On Symbols 115) rhetoric motivates action or, equally crucial, the adoption of an attitude which serves as a predisposition toward a desired future interpretation or action.

Thus, communication is conceptualized as less the transmission of secure fact, than the exchange and negotiation of meaning. The resultant accord determines the foundations of shared knowledge and social practice. Crucial here is Raymond Williams's distinction between two meanings of the word "determine": it may be considered an "external cause which totally predicts or prefigures," or rather, it may refer to the setting of limits and exerting of pressures (32). The second definition most compellingly describes the role of language in argumentation and knowledge formation. Within this conceptual framework, degrees of certainty are the justification and impetus for action, and skilled application of language may determine which course it takes.

Context

The core factor in any communicative exchange is context. Texts and contexts exert mutual influence, and broader institutional discourses and patterns both constrain and enable communication as rhetors draw upon, and situate their appeals in relation to, existing discursive patterns and resources. A useful distinction may therefore be drawn between contextual constraints on one hand, and strategic invention on the other. Leah Ceccarelli, for example, argues that texts are best approached as “a convergence of discursive opportunities and material constraints” (316). From the perspective of rhetorical theory, artefacts are specific, situated and purposive. Emphasis is on the strategic application of language and the function of purposive textual structures of influence.

However, full appreciation of a rhetorical act’s significance requires consideration of its broader contextual relations. Thus Hariman, in reference to the work of Kenneth Burke, observes that symbolic motivations are “simultaneously conventional and particular and the result of not only the discursive activation of deep patterns of meaning but also the situational transformation, synthesis, or subversion of those patterns” (179). Actions are only relevant in relation to their historical and material contexts. At this level of analysis, questions about texts’ material consequences and political and ethical implications become central.

Discourse affects and reproduces society, and thus raises the questions: what is communicated, and in whose interests? The task becomes one of making explicit the circular link between specific texts, knowledge systems, and social and institutional practice. Put simply, how are discourse formations, and thus social relations, promoted, sustained or transformed by the symbolic action (Burke, On Symbols) of particular texts?

It is in this sense that discourse articulates, manifests and activates ideology by embedding it in sign systems, thereby affording it material form. Both are the site of struggle between competing narratives, and both provide a “systematic framework for understanding” (MacDonald 28) and template for future action. Individual terms are thus the site of discursive struggle, and ideology, to quote Eagleton is a matter of “conflicts within the fields of signification” (*Ideology* 11). The task, then, is to draw what David Howarth calls an “analogy between linguistic and social systems” (13).

Public judgment

Through concern with how dominant social and political systems sustain themselves through symbolic action, I am interested in the rhetorical consolidation of power. I am thus concerned with the manipulation of information and use of propaganda to negate dialogue and foster public consent. However, I optimistically characterize rhetoric as the art of practical reason, the foundation of progressive civic participation and a prerequisite for communication. Each contention stems from the belief that, although subject to parameters, human agents may, through discourse, exercise influence over material and social systems. The result is what Stuart Hall labels a “struggle for mastery in discourse” (“Rediscovery” 77), often quite simply a matter of promoting a preferred definition which orients an audience towards specific judgment of a sign’s connotations. The metaphor of struggle well depicts language’s contentious relationship to both truth and ethics. For there is no guarantee that a prevailing interpretation will be the most ethical, just, or pragmatic. Discourse formations in general, and rhetorical acts in particular, may thus either stimulate or restrict the capacity for enlightened civic deliberation.

David Zarefsky articulates the ambiguous reputation of the art when he claims: “rhetoric is seen as a path to civic engagement but is also viewed as a deterrent to civic participation” (29). Yet the practice need not entail deceit, but may, rather, enhance mutual understanding. I find Burke’s definition, “the use of language as a symbolic means of inducing cooperation” (On Symbols 188) most useful, for the word “cooperation” suggests a fundamental dimension of rhetorical practice: a speaker or text persuades through inviting, and striving to gain, the wilful assent of its audience through their cognitive identification with the proposed argument. Here again, the consequence of the ensuing deliberation is affected by the quality of available information. But despite its inevitable hazards, purposive argument is foundational to all successful communication, negotiation and consensus formation.

In characterizing rhetoric as a judgment-based deliberative art, I draw upon Thomas Farrell’s The Norms of Rhetorical Culture, and Perelman and Olbrechts-Tyteca’s The New Rhetoric: A Treatise on Argumentation. Farrell builds upon Aristotle’s depiction of rhetoric as an audience-centred art of practical and pragmatic reasoning. He claims the practice to be “the discursive link between human rationality and civility” (Gaonkar 336), and states that in Aristotle’s vision, “rhetoric was the art which employed the common knowledge of a particular audience to inform and guide reasoned judgments about matters of public interest” (“Knowledge” 140). As a practice, rhetoric was vital for the creation and sustenance of social coherence, for it afforded “the primary arts of forming public convictions and doctrines and presenting them” (Norms 8).

Complementing this portrayal is Perelman and Olbrechts-Tyteca’s definition of argument as the attempt to enact “the adherence of minds” (14). Echoing Aristotle, these

two theorists draw a distinction between demonstration and argumentation wherein the former follows the rules of formal deductive logic, while the latter is “the study of the discursive techniques allowing us to *induce or increase the mind’s adherence to the theses presented for its assent*” (cited in Foss et al 86). Due to the provisional nature of knowledge, questions surrounding matters such as ethics and law must be evaluated without the capacity for formal demonstration. Such decisions are made as a culmination of probable reasoning, negotiation and collaborative judgment.

It was with the belief that rational, open dialogue and public access to differing ideas are essential to a vigorous democratic society that Jürgen Habermas developed the notion of the public sphere. This was conceptualized as a mediating place between the state and society wherein the public might freely engage in rational dialogue for the general interest. Its aim was the “rationalization of power through the medium of public discussion among private individuals” (107). There are, of course, vulnerabilities to this model, such as its implied existence of a common good. As observed by Darin Barney, criticism “forged in the post-metaphysical fire of social constructionism... is deeply suspicious of the essentialist tone that rings in talk of the good life” (661). Gerard Hauser, for one, contests the ideal of rational consensus formation. He argues that it contradicts the reality of political process through its tendency to “disregard rhetorical discourse... as a form of ideological distortion.” He states, “Political communication is inherently rhetorical, and rational consensus is not always a rhetorical possibility” (Vernacular 46).

The observation that all discourse is motivated is warranted, as is the claim that rational consensus is not always possible. Yet neither point need obstruct the capacity for rational, collaborative deliberation. Hauser claims further, “Civil society is guided by

recognition of mutual dependency and, therefore, of differences that must be valued at least to the extent that they are treated as relevant to political relations that are to emerge” (Rhetorical 4). Discourse formations may either encourage social cohesion or establish divisions between communities, and it is rhetoric’s capacity for the former which is imperative. Weighing the potential importance and relevance of competing prospective courses of action is a requisite of civic life. On no subject will all citizens agree, but decisions need nonetheless be made. Within the context of pressing environmental issues such as climate change, it is preferable that public policy respond to empirical evidence. A deliberative model based upon compromise may ensure that such policy options receive the broad support required for their successful implementation.

Deliberative sites and political influence

Where may and does public deliberation occur? Before addressing this question, one must specify, what is a public? Michael Warner suggests that it is “a space of discourse organized by nothing other than discourse itself.... It exists by virtue of being addressed” (67). Hauser concurs with this conceptualization of publics as multiple when he states, “the *principle* of the public sphere is manifested in a *plurality* of spheres” (Vernacular 39). This heterogeneity inevitably results in myriad of exceptions to any communicative model.

Several ideal principles inform this paper: that civic deliberation is inclusive, that enhanced informational quality leads to informed public opinion, and that civic judgment influences policy creation. To sustain these principles, society must guarantee public access to all relevant information on issues of public concern, and citizens’ rights to publicize their views. Yet as Hauser observes, while “democracy is based on the premise

that public opinion should matter in deciding the course of society... what counts as such an opinion, how we learn its content, and how it gets represented are anything but certain” (Vernacular 1). Even were a unified public opinion a possibility, there is no assurance that it would influence governmental policy. Gregory and Miller lament:

Informed voters are supposed to be able to exert pressure through the ballot box and by lobbying. Informed consumers exert their pressure by buying or boycotting. But with elections spaced on timescales of years and with pricing and display policy almost totally under the control of producers and retailers, the weapons in the hands of ordinary citizens are fairly blunt. Little has been done that would turn greater public understanding of science directly into democratic political and economic power. (14)

Civil society may not require consensus. But such society does require, first, citizens’ competence to engage in civic dialogue, and second, that such participation be of consequence. Yet negotiation of meaning is rarely enacted between equals. Individuals have varying degrees of access to cultural resources, forums of deliberation and means of circulation. In addition, dominant frameworks of reference exert significant persuasive power. One might even question the very relevance of public opinion within the contexts of climate science and international policy. As Goodnight inquires, “If it is the case that specialization is necessary to make knowledgeable decisions, then what value is the participation of common citizens?” (“Personal” 259).

However, while science may provide the best available information regarding environmental issues, how a society responds to that evidence is another matter. Successful translation of such findings into political legislation requires both broad public endorsement and selective allocation of social resources. When scientific evidence forcefully indicates that current economic practice must be altered (as in the case of climate science), there will be governmental resistance against such undertakings. Here, it

is vital that national publics comprehend the fundamentals of the relevant science, and exert pressures on their respective governments to implement appropriate precautionary measures.

Requiring additional consideration is the role of media as the means of publicity and knowledge circulation. Popular news media are privileged spaces for debating ideas and proposals; they exert influence by defining interpretive frames and setting the terms of debate. Mass media practices within a market economy may lead to fragmentation and privatization of public discourse. However, they ideally mobilize attention to issues of collective public concern, thereby promoting and facilitating dialogue.

Within the context of controversial science, news medias' mythic adherence to principles of impartiality and objectivity is critical. The concept of impartiality implies that truth is elusive or contested; media are thus obligated to provide a balanced description of a given phenomenon. By contrast, claims of objectivity suggest the possibility for accurate representation against which distinct claims may be measured. In the sphere of science, particularly regarding atmospheric science, certainty is illusive. The issue, then, involves determining the proportion of coverage justified by competing viewpoints; what ratio constitutes balanced reporting?

This question is vital, for balanced coverage does not compel depiction of all positions as equal. If the claims of private corporations such as the MI are presented as a equally legitimate alternative to those of the IPCC, the principles of scientific expertise and institutional authority are abandoned. Although not all organizations' views receive media representation, the MI does exert sufficient influence to translate its publications into popular media coverage. Equivalent depiction of contrasting viewpoints may profess

journalistic integrity and increase a narrative's dramatic effect, but it does so at the expense of informational quality.

Methodology

Because social power is continually constructed through discourse, the access point for critical analysis is at the contextually-embedded site of specific texts. This paper examines official MI media releases from 2005 and 2006. As influential sources of news coverage, and thus public opinion, these publications provide an opportunity to assess the origins of North American public distrust of mainstream climate science.

Informative theory is drawn predominantly from Aristotle's Rhetoric. Of specific benefit in considering the relations between public deliberation and action, and between rhetoric and science, is his definition of argumentation's two fundamental structures: the enthymeme (which relies upon the audience for its completion and is thus based upon probability), and the example (the basing of a proposition's proof on a number of similar cases). Further useful is his differentiation between three rhetorical occasions: deliberative, forensic and epideictic. While the MI is certainly concerned with future political decisions (and thus works within a deliberative model), its overarching goal is to sustain existing economic practice. This involves lauding the values underlying such practice.

I thus draw primarily upon Aristotle's epideictic model, for it most directly involves a current state of affairs. Epideictic rhetoric appeals to "common values, undisputed though not formulated" (Perelman and Olbrechts-Tyteca 53). Defining this form, Aristotle states a speaker must "frame his proofs and arguments with the help of common knowledge and accepted opinions" (6). Through acts of praise and blame, one

may thus reiterate and amplify pre-existing notions of community and collective identification, thus perpetuating a systematic pattern of interpretation. No immediate action is called for; the addressed audience is encouraged, rather, to intensify its adherence to a familiar set of values and pattern of beliefs. As Perelman and Olbrechts-Tyteca justly observe, “a belief, once established, can always be intensified” (44). This amplification is facilitated by the fact that audiences may welcome appeals which reflect their familiar and deeply held beliefs and values. When an audience is thus predisposed to identify with a message, appeals evade critical assessment of their transparent connotations; they are an effective means by which to both consolidate and exploit a community’s shared beliefs. Deeply ingrained cultural values exert great influence on individuals’ dispositions towards future action (or inaction). The intensification of attitude has eventual material consequences.

Supplementary theory is drawn from Burke’s method of cluster-agon analysis. Following this approach, texts are analyzed for their central terms and key oppositions. This calls for identification of key terms and metaphors, those which attempt to represent the essence of a principle or belief and which function as “names for the ultimates of motivation” (Grammar 74). Such terms construct a frame within which an entire discourse operates. Equations (both explicit and implicit) are encouraged between arbitrarily associated ideas and social phenomena. In concert, dialectical oppositions attempt to determine the relationship between the two opposing terms and thus direct or deflect attention to and from specific associations.

Drawing upon these correlated theoretical approaches, I elucidate textual strategies and designs which strive to effect persuasion. I trace the tactical application of

language to construct desired understanding, examine the selected documents' central argumentative structures and assess the basic assumptions on which they are predicated. By exploring these textual devices' mythic bases and latent narratives, I attempt to illuminate the MI's political motivations and chart its use of abstraction as a means by which to obscure specific sites and agents for action, and thus facilitate evasion of responsibility. The intention is to assess the textual means by which current scientific knowledge is subverted while socio-economic and political inertia are encouraged.

Chapter Three. Scientific and Ethical Authority

Two crucial paradoxes circumscribe the MI's project. First is the discordance between its proposition that climate change should be addressed through technological innovation, and concurrent attack on the capacities of science itself. Second is the MI's claim to scientific authority, and continual contradiction of the evidence generated by the world's leading scientific organizations. Perceived reconciliation of these two recurrent inconsistencies requires the application of strategic logic.

It is illuminating that the MI has two paramount areas of focus. Consider the following quotations, both from contemporary MI publications:

Action is appropriate. But, it should be based on facts, objective analysis, and the reality that actions have consequences, often unintended ones. ("Climate Change and National" 1)

Weapons of mass destruction... now pose a direct threat to the safety and security of the United States. Moreover, the number and sophistication of these threats are evolving at a pace that no longer allows the luxury of long lead times for the development and deployment of defenses. ("Missile" viii)

These two passages address distinct problem domains: the first critiques climate science, the second advocates creation of a comprehensive U.S. missile defence system. Each issue hinges upon questions about the intersection of science, threat, and institutionally sponsored precautionary strategies. Specifically, what is the nature of threat and what degree of certainty is required to justify appropriate precautionary action? That one speaks of the potential dangers of action, while the other warns of the dire consequences of inaction demonstrates the tactical mobilization of the concept of probability. The

hazards of the first stem from impulsive and injudicious action. The destruction of the second results from bureaucratic vacillation and a lack of decisive resolution. Faced with two such conflicting propositions, two questions must be asked: how is threat evaluated, and who is authorized to do so? Who, in other words, speaks on behalf of science?

The MI's official mission statement declares that the organization is "dedicated to fostering and preserving the integrity of science in the policy process" ("Climate Issues"). This agenda required that it speaks from a position of scientific authority. In its attempt to undermine the IPCC, the MI thus finds itself in the unfavourable position of arguing against an internationally respected body comprised of leading members of the scientific community. However, its position benefits from the fact that it argues not for implementation of unfamiliar, and potentially expensive legislation, but rather for continuation of existing social practice.

Towards the goal of achieving interpretive authority, three strategies are central. The first involves a tactical definition of the scientific project as potentially pure, and correlated valorisation of neutrality. This allows for a distinction to be drawn between the ostensibly politicized science employed by the IPCC, and the "pure science" informing the MI's counter claims. The second tactic is self-identification with the principles of reason, prudence and pragmatism. This goal demands that the prescribed response pays lip service to the possibility of a negative outcome, and in turn, provides a remedy. The MI thus bolsters its argument by situating it within a proactive framework, one that weds prudence concerning economic security with innovative approaches to potential environmental threat. Their final tactic entails an appeal for further research and unrestricted debate regarding the significance of existing evidence. In striving to justify

sustained inaction, the MI thus purports to represent the diverse virtues of scientific integrity, prudence, and, through allusion to the principle of open inquiry, liberal democracy.

Definition of science

Interpretive battles are to a great extent battles over definition. Consider the MI's diagnosis of the likely effects of climate change:

If average temperature increases, the likelihood of surpassing the local definition of extreme heat will also increase. Conversely, the likelihood of surpassing the local definition of extreme cold will decrease. In time, it is likely that these definitions would be changed to reflect the change in long-term climate. ("Climate Issues" 31)

This passage is a reassurance that, despite erratic results in certain localities, global balance will prevail. But through suggestion that the solution to climate change involves simple redefinition of baseline temperatures, it is also a celebration of language's magical qualities. Socio-political upheaval resulting from changes to weather patterns, it suggests, may be addressed through a collective re-articulation of what it means to be cold, hot, dry or underwater.

There is good reason for the MI to be concerned about the political consequences of definition. The term "science" conventionally signifies those branches of study incorporating empirical observation, quantification of material phenomena and both induction of their governing laws, and deduction of specific hypotheses. This interpretation corresponds with the IPCC's analytic approach to the body of scientific literature. Mobilizing the force of language, the MI thus makes a vital qualification; it constructs an idealized portrait of the scientific project as apolitical, universal and pure. Objectivity and neutrality are depicted as not only desirable, but achievable. Empirical

study is thus equated with transcendence of the limits imposed by human subjectivity, and science is extolled as the means by which to achieve absolute certainty about physical processes and events. The MI thereby creates a binary opposition between theory and practice (wherein human engagement serves to contaminate scientific purity). Censuring the IPCC's declarations of consensus, they argue, "opinions are not facts until they are validated" ("Reply" 2). This depiction provides a discursive breach through which the MI can degrade the scientific establishment while offering itself as guardian of scientific integrity.

For if literally objective science is declared possible, the alternative is unacceptable. The MI thus carves an epistemological boundary between rigorous and compromised scientific methodology, between absolute certainty and mere (and inconsequential) probability. Because climate science is inextricably linked to probabilistic hypotheses, this tactic strives to emasculate its predictive claims. William O'Keefe, president of the MI, mobilizes this strategy when he states, "What is needed for better policy is greater openness, the antiseptic of healthy debate, and greater emphasis on rock solid observation and measurement" ("Group" 4). Allusion to fundamental tenets of liberal democratic thought is an appeal to ethics. However, the demand for "rock solid" evidence strives to undercut climate science. The MI demands that policy be derived solely from "fact based reality" ("Climate Policy" 1), and charges the IPCC with "[imposing] a predetermined solution independent of what the science actually tells us" ("Group" 4).

This last phrase allocates full autonomy to science as an idealized concept. A scientist's role in such a model is presumably to function as a marionette, as a submissive

medium through which science, the puppeteer agent, discloses her universal and irrefutable facts. When scientists attempt to add their own voices to the monologue, “What should have been an ordinary scientific question [becomes] a political one” (“Climate Issues” 25).

If one admits the inevitable rhetorical dimensions of scientific practice, the role of assumptions in any form of communication and knowledge creation is presupposed. However, the question then becomes, whose assumptions are most valid? Who has interpretive authority in any given situation? Here the IPCC, comprised by hundreds of internationally respected scientists, presumably has such authority. The publications of the MI, by contrast, are not peer-reviewed and make negligible reference to external sources. However, if assumptions themselves are successfully portrayed as a blight upon scientific practice, any opponent’s claims may be criticized due to their association with qualitative judgment or political exigencies.

The MI employs logical acrobatics by portraying itself as defender of the sacred grounds of scientific purity while simultaneously denigrating the conclusions of the world’s leading scientists. This sets the grounds for its subsequent self-identification with the ethical qualities which congregate under the banner of science.

Reason, prudence and pragmatism

Within the sphere of public debate about science, ideals of scientific modernity and common sense may be mobilized to crucial effect. Burke has observed, “A speaker persuades an audience by the use of stylistic identifications. . . . the speaker draws on identification of interests to establish rapport between himself and his audience” (Grammar 570). While reason is the core of persuasion, conviction is derived by a

speaker's credibility (Garver 6-7). In order to promote public identification with their claims, the MI thus attempts to appropriate the authority and prestige associated with the Enlightenment principles of reason, stability and prudence. Asserting, "Policy needs are better served by clarity and accuracy" ("Climate Issues" 1), it strives further to encourage a conceptual equation between their political objectives and the assumed superior knowledge derived through empirical process.

Yet, arguing as they do against conventional scientific belief, the MI is hard-pressed to garnish the institutional support that would lend its claims authority. O'Keefe at times calls upon the support of Michael Crichton (science fiction author of Jurassic Park), who claims: "environmentalism has replaced religion. The environmental orthodoxy divides the world into angels and demons with the demons being anyone who expresses skepticism about the asserted climate consensus" ("Climate Policy" 1-2). However, despite such literary excursions, the MI is aware that their argument requires more substantive bases. Appeals to common sense are one solution. Evoking the spirit of pragmatism, O'Keefe thus argues:

[R]eporting and politicking tend to focus on rhetorical and emotional rather than what is pragmatically possible or probable. The public clashes that regularly take place over environmental issues tend to focus on extremes; not broad areas of agreement, which define the possible. In the process, I believe that the media does too much persuading and too little informing. ("Evaluating" 1)

Several aspects of this passage are significant. Central is its appeal to probability, and coincidental reaffirmation that the aim of science is to inform rather than persuade. This contradictory synthesis of argument on one hand consolidates the idea that it is possible to discover, and then communicate, objective knowledge. However, the plea on behalf of "what is pragmatically possible or probable" situates the discourse within the sphere of

practical common judgment. The irony inherent in the call for focus on “broad areas of agreement” is thereby obfuscated as the few dissenting voices within the debate, the MI being a leading member, is allocated scientific credibility on par with that of the IPCC.

But the MI’s goal transcends a desire for perceived equal interpretive authority; it strives to claim superior positioning in the debate. Disparaging reference is thus made to opponents’ interpretive “extremes.” Towards this end, O’Keefe attacks a prominent advocate of climate-related governmental regulation. Responding to Al Gore’s September 18, 2006 speech at New York University, O’Keefe depicts Mr. Gore as a naïve idealist and argues that his regulatory proposals “cannot be achieved politically, practically, or economically” (“Climate Zealotry” 1). The goal of such accusations is to advantageously define the MI’s argument through opposition. Calls for immediate and substantial regulatory action are thus trivialized as stemming from premature haste and faulty understanding of the issue. Stating, “Complex problems like climate change cannot be solved quickly” (“Climate Zealotry” 3), O’Keefe indicates the MI’s preferred response: a touch of precaution, and a liberal dose of august patience.

In February 2006, the MI published their most thorough response to climate science: “Climate Issues and Questions - revised and updated.” This document professes to be equivalent in breadth and rigor to refereed scientific literature. It is thus required to demonstrate cursory acknowledgment of prevailing scientific belief. In response to this exigency, it declares:

While there is a debate over the amount of [climate] change, and an even greater debate over the causes of that change, there is no evidence to argue that the world as a whole is not warmer than it was a century ago.... [The IPCC’s] finding that the Earth is committed to additional warming is also not surprising, since this concept has been well understood since at least 1990. (“Climate Issues” 10)

With these words, the MI treads thin discursive ice. For they signify a full reversal from the claim that science is incapable of predicting future climate variation. The negative, convoluted phrasing of the passage, “there is no evidence to argue that the world as a whole is not warmer,” indicates the MI’s reluctance to grant such concessions. Further acknowledgment of prevailing belief is demonstrated by the admissions: “we know that reducing emissions involves reducing fossil fuel use” (“Climate Policy” 2), and “The notion of a consensus is limited to a few climate facts—the greenhouse effect is real, temperatures have risen over the past century and so have carbon dioxide levels, and human activities affect climate” (“Group” 2).

Yet the concessions that human fossil fuel consumption has led to planetary warming, and that continuation of current practice will lead to further warming, are not defeatist gestures; they are practical manoeuvres. By aligning the MI’s position with that of mainstream science, they allocate the MI a degree of interpretive credibility and justify its participation in the policy debate. Nonetheless, these acknowledgments suggest the termination point of the MI’s argumentative coherence. In order to reconcile conclusive facts with the organization’s fundamental aversion to regulatory action, such concessions require qualification; they must be portrayed as insufficient to justify such legislation.

Depiction of the climate system’s excessive complexity is one possible tactic. The MI thus asserts, “We know that human activity has contributed to a warmer world but not whether the longer term impact will be trivial or serious (“Climate Policy” 2). This argument is repeated: “There is no doubt that humans have contributed to the recent increase in atmospheric CO₂ concentrations.... [However] the relationship between these changes in the atmospheric concentrations and observed changes in climate is not simple”

("Climate Issues" 4). Another device is blunt defiance of all inferences drawn from these core conclusions. While it is admitted that "The concentration of CO₂ in the atmosphere that is going upward and that can be attributed to the large-scale consumption of fossil fuels... is not a controversial point" (Frauenfeld et al 41-2), this fact is dismissed as irrelevant. No justification is provided for this position; it is simply a restatement, then crude rejection of their opponent's argument through allusion to generalized uncertainty.

Attempts are also made to equate future climate variations with a holistic, Gaian notion of balance. It is claimed, "If the Earth warms, some types of extreme weather events will increase, others will decrease, and still others will remain unchanged. The occurrence of what is now defined as extreme heat will increase, while extreme cold will decrease" ("Climate Issues" 31). Depiction of such potentially egalitarian effects of climate change is complemented by emphasis of the earth's natural complexity. For each tactic functions to trivialize humanity's collective significance and thus minimize human responsibility. Portrayal of human activities as inconsequential within the larger sphere of the earth's natural patterns strives to foster a conception of tranquillity. As heat balances cold across the globe, the end result is a sustained equilibrium.

And should doubts linger, there is a final line of attack: appeal to sheer futility:

The fact that the oceans are warming, and thus their heat content increasing, is not surprising. The atmosphere has been warming, on average, for a century, and since the oceans are in equilibrium with the atmosphere, they, too, should be warming. Nor is it surprising that the Earth is committed to additional warming. The climate system has inertia and continues either warming or cooling for a period of time even after the driver has been removed. ("Climate Issues" 11)

Within this framework, it is possible to admit human liability for climate change while simultaneously exorcising all responsibility. Even if governments do act, the damage is

irrevocable; the world is committed to additional warming due to the inertia of the climate system. By thus rendering the issue impassable, the prudent course of action becomes protection of that which can still be saved: the current socio-economic order.

Securement of ethical high ground, however, demands that the MI promises twin salvation: both economic and environmental security. The means to this end is an assertion that rigorous precautionary action is already underway. Public awareness of the dangers posed by climate change is now sufficient to render simple denial of its existence problematic. Significant climate variation is thus portrayed as dependent upon a faulty assumption: that “No overt action is taken to control greenhouse gas emissions.” It is therefore argued, “a variety of actions, some voluntary, some mandatory, are currently being taken to control greenhouse gas emissions” (“Climate Issues” 19). These words signal the MI’s tactical (and ephemeral) discursive shift, beyond the sphere of denial and into that of outwardly proactive solutions.

Equating the MI’s stance with pragmatic, proactive realism, O’Keefe proclaims, “Uncertainty complicates decision making but need not paralyze it” (“Climate Policy” 2). This call for (hesitant and reserved) action is reiterated elsewhere: “I want to be absolutely clear that uncertainty is not an argument for inaction. It is an argument for action tempered by our state of knowledge, the limits of knowledge, and that is consistent with our economic aspirations” (“Climate Change and National” 2). While the dangers posed by climate change are admitted only indirectly, and in a manner which emphasizes their ambiguous quality, this concession affords the MI an opportunity to do more than simply critique the views of the established scientific community. It provides for its own

judgment of the evidence, and articulation of the most reasonable course of responsive (in)action.

Offered as an exemplary model of appropriate response to climate change is contemporary U.S. governmental policy:

The Bush Administration has set a challenging target for reducing greenhouse gas intensity, is probably spending more on climate science and technology than all of the European Union and is pursuing sector based programs and agreements with other countries that will actually lower the growth in emissions. (“Evaluating” 2)

Lack of supporting evidence emasculates these broad claims, but their intention is clear: to equate the current status quo with not only prudence, but also innovation. Indicative of this tactic is the MI’ s assertion that predictions of environmental upheaval are:

[B]ased on the assumption that nothing will be done over the course of this century to address the risk of climate change. That is an absurd assumption as actions are clearly being taken to develop new technologies and reduce emissions without causing serious economic harm. (“Reply” 2)

So long as existing knowledge is portrayed as deficient, recommendations for governmental legislation can be censured as premature. The MI provides a tonic for the sufferings of responsibility by claiming that progress is continually being made as research and technology advance. It proposes execution of “actions that are likely to do less harm”, and that “evolve as knowledge increases” (“Group” 4). Beyond its familiar emphases on scientific uncertainty and the economic risks posed by legislation, this argument foregrounds the benefits of supplementary research and technological advancement. Eventually, it is implied, knowledge will be sufficient to justify a response which achieves both economic and environmental stability. At that time, policy will undergo adjustment to accommodate new evidence. Because such research falls in the domain of science, the average citizen need contribute only patience.

The words “do less harm” are significant, for they demonstrate tactical allusion to the precautionary principle. This concept entails evaluating a new technology’s prospective benefits in relation to the possibility, and potential severity, of negative environmental impacts. Articulated within Principle 15 of the 1992 UN Conference of Environment and Development in Rio de Janeiro, it states, “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation” (Louka 33).

The MI inverts the precautionary principle’s original function. The economy is depicted as the foundation of social and environmental health, and potential governmental regulation threatens to destabilize its operations. The market thus supersedes the environment as the principal subject, and the burden of proof falls upon those who call for modification of the present socio-economic order. Combining the appeal to further research with this reaffirmation of the economy’s vital social status (and antithetical relationship to environmental regulation), the MI asserts, “wise public policy should be flexible, responsive to new knowledge and strike a balance between actions to reduce emissions and the imperatives of promoting economic well-being” (“Response” 2).

Activating twin ideals of pragmatism and conceptual elasticity, the MI proclaims “the best way to prepare for the unknown and unexpected is through resiliency” (“Evaluating” 3), and “we need realistic policy options that can be adjusted as we acquire new knowledge” (“Climate Change and National” 3). As an analogy for the symbiotic

dance between progressive research and policy, it offers the example of the North American journey of Lewis and Clark:

Lewis and Clark planning... applies to situations where information is scarce and uncertainty about what lies ahead is great. Lewis and Clark undertook their mission knowing only their ultimate destination but without a lot of knowledge of how to get there. They put heavy emphasis on acquiring and assessing information, and then proceeding short distances before repeating that process. (“Climate Change and National” 3)

The romanticized sentimentality of this passage risks obscuring its two most significant features. First is the similarity between this prescribed course of action and that which informed the creation of the Kyoto Protocol. Ratification of the Protocol required deliberations within a context of substantial uncertainty; the 168 participating nations agreed only on a general objective. Negotiations lasted for two and a half years and certainly demanded “heavy emphasis on acquiring and assessing information”. Further, the objective was indeed to proceed “short distances before repeating that process”; the current commitment period extends only to 2012, after which time subsequent targets will be determined (“Kyoto Protocol”). Second, and crucial to any understanding of the motivations behind the MI’ s overarching discursive strategy, is the ambiguous phrase, “[they] undertook their mission knowing only their ultimate destination.” Critically important here is an appreciation of the MI’ s sought-after ends: a particular configuration of socio-economic relations, an affirmation and consolidation of neo-liberal market economics.

Democratic free inquiry

The MI can not securely promote its interests through engagement with the body of scientific literature. Complementing its appropriation of scientific ethical authority, it

therefore evokes values fundamental to the liberal democratic state. Disregarding the state's pivotal role as guarantor of civil health and well-being, it elects to champion solely the revered Western traditions of free inquiry and individual rights. As Burke once observed, "Men who can unite on nothing else can unite on the basis of a foe shared by all" ("Rhetoric" 150). Censors and totalitarians make excellent foes. By contrasting its stance to dogmatism, orthodoxy, tyranny and suppression of open debate, the MI situates itself as a guardian of democracy.

At this point in the MI's strategy, the ideal of gradual knowledge accumulation merges with the "right to speech and the freedom to associate – rights that Americans hold dear" ("Response" 8). The scientific establishment is thus depicted as rigid in its beliefs and blind to its true function. The MI asserts, "Objective and constructive criticism are essential to public policy that maintains a healthy balance among competing and conflicting interests" ("Evaluating" 3). This argument is repeated: "The market place of ideas is at risk of being replaced by a monopoly whose orthodoxy is intolerant of dissent" ("Group" 3). The values underlying this sentiment are difficult to contest, nor would many North Americans wish to do so. What matters then, are the ends towards which such noble statements are directed.

On September 4, 2006, the Royal Society, national academy of science for the UK and the Commonwealth, sent a letter to Nick Thomas, Director of Corporate Affairs for Esso UK Limited. Therein, they advised Mr. Thomas that his organization's publications inaccurately represent existing scientific evidence. They charged, "your documents are not consistent with the scientific literature that has been published on this issue" ("Royal Society"). In response to this letter, the MI published a rebuttal of its own: part assault on

bigotry and part sermon. It serves as an excellent example of their attempt to shelter their tactics under the mantle of democratic free inquiry:

The censorship of voices that challenge and provoke is antithetical to liberty and contrary to the traditions and values of free societies. That such a call comes from such a venerable scientific society is disturbing and should raise concerns worldwide about the intentions of those seeking to silence honest debate and discussion of our most challenging environmental issue – climate change. The foundation of science, as well as its contributions to the betterment of mankind, is based on skepticism and debate.... Political discourse, at least in the United States, rests on the principle that all voices have the right to be heard and that any person is free to associate with whomever they so choose. Science demands those freedoms and scientists ought to embrace them. (“Response” 1)

While reading this passage, it is important to bear in mind both the stature of the Royal Society, and the significance of its decision to directly enter the political arena by publicly challenging a private corporation’s publications. The Royal Society was formed in 1660 and has since that time defended its scientific credibility by maintaining a distinction between the spheres of science and politics (“About the Society”). Given this long history of demonstrated caution, that the Royal Society should feel compelled to confront a corporation for its lax application of scientific evidence is significant. This act indicates the importance the Society affords both to climate science, and to its distortion by detractors. Summarizing their position, they declare, “It is essential that the scientific evidence on climate change is accurately represented so that policymakers, industry, the public and other stakeholders can make informed decisions about what actions to take” (“Policy statements”).

The MI can not win this battle if it is waged in the realm of science; it thus transfers the terrain, and portrays the debate as one between defenders of democratic principle and “those seeking to silence honest debate”. Summoning the moral and

cultural authority vested in the U.S. Constitution's First Amendment, the MI mobilizes the key term "liberty" in opposition to its evil twin "censorship". This act articulates the moral principles at stake.

The MI declares:

[O]ur organization takes its work very seriously and works diligently toward the realization of a set of actions consistent with our principles and our assessment of the science. We are willing to let the scientific community do its work, generate data, test hypotheses, and educate. We fear others are not. ("Response" 3)

This is an attempt to resolve the dilemma posed by alienation from prevailing scientific belief. A distinction is made between the scientific practice of data accumulation, and the interpretive act of evaluating such data's meaning and implications. The MI asserts: "The interpretation of data is not itself a fact. It is simply an opinion and, in a free society, policy makers and the public are free to judge opinions and the weight of evidence that supports them" ("Response" 1). Exemplifying their paradoxical stance on the issue of scientific authority is the statement:

Questions about the human impact on the climate are not settled and debate about them and other significant issues about the climate system should be encouraged, not stifled.... It should logically follow that there are policy alternatives for addressing the climate risk that are consistent with our understanding of the causes of climate change. ("Response" 2)

Because the MI's goal is to ensure that, in the public's understanding, climate science never achieves sufficient certainty to justify such legislation, this argument leads inexorably towards determined resistance to governmental regulations. However, by demanding recognition for "our assessment of the science" ("Response" 3), and "our understanding of the causes of climate change", the MI contradicts their prior claims that science is apolitical. For in attack on the IPCC, it affirms: "expert judgments are by their

very nature subjective” (“Response” 1), and “Expert judgment is not science” (“Response” 4). In opposition to its occasional declarations of privileged interpretive authority, the MI here suggests that all persons are equally entitled to judge the significance of scientific data. Within the sphere of liberal democratic thought, the necessity for governmental transparency lends this claim credibility. But when contrasted with the MI’s conflicting demand that policy be based upon pure, objective fact, this depiction of the relationship between technical knowledge and public discourse becomes untenable.

The paramount question therefore is: who is best qualified to judge the significance of scientific evidence: a Washington DC think-tank’s self-appointed board of directors, or the world’s authoritative climate science institution, one comprised of hundreds of leading scientists from over 100 countries?

The very nature of science is at question, an effect in harmony with the MI’s goal of undermining the IPCC’s relevance. It must be reemphasized that the MI’s prime ambition is to discredit climate science and thereby perpetuate the status quo. Having appropriated the moral authority associated with the scientific method, the discipline of science can be casually disregarded, either under the banner of democratic rights, or through accusations of political debasement.

The MI states, “We can do better by not demonizing those who raise legitimate issues for debate. After all, challenge and skepticism are the hallmarks of good science and the source of new knowledge” (“Climate Policy” 3). Mobilized here are both democratic convictions and demands for empirical rigor. A tenable argument may be made regarding the limits of scientists’ interpretive privilege beyond the laboratory. For

instance, once threat is established by an institutional authority such as the IPCC, diverse voices should indeed participate in the political sphere wherein the merits, plausibility and efficacy of varying proposals are debated. However, by implying that all interpretations of scientific evidence are equally valid, the MI attempts to strip science of half its function. Science is caricatured as a congregation of worker bees whose sole task is to generate data. Once that task is complete, however, the significance of those findings is anyone's guess.

The scientific practice is thus hewn into two domains. The first, practical: the site wherein data is generated. The second, epistemological and ethical: the site wherein interpretations of raw data are made, hypotheses constructed, and the validity of these claims judged. By this means, the MI aspires to obscure their argument's prime deficiency: their organization's dearth of scientific authority relative to that of the IPCC. By first declaring that prevailing scientific belief stems from institutional tyranny, and then offering itself as defender of free inquiry, the MI claims the social allegiance of, and moral integrity allocated to, the individual. Confronted by a dominant, yet compromised institutional force, individuals' freedom to critique orthodoxy is an essential aspect of democratic society. Depicting itself as righteous underdog, defender of both scientific integrity and cherished individual liberties, the MI professes to represent just such rational, dissenting voices.

Chapter Four.

Climate Science as Deficient and Corrupt

Missile defense has entered a new era. The decades-long debate over whether to protect the American people from the threat of ballistic missile attack has been settled – and settled un-equivocally in favour of missile defense. (“Missile” viii)

The debate over the state of climate science and what it tells us about past and future climate has been going on for more than fifteen years. It is not close to resolution, in spite of assertions to the contrary. (“Climate Issues” 1)

By reaffirming the contention that, given sufficient grounds of evidence, controversial debates may be settled wholly and “unequivocally,” the first of these excerpts corresponds with the MI’s recurrent assertion that scientific certainty is not only desirable, but achievable. Yet within the context of climate science, such a result would be counter-productive to its ambitions. This necessitates a qualification of its position; to attack the IPCC’s recommendations as flawed, the predictive capacities of climate science must be brought into question. Thus, while pure objectivity is maintained as the ideal, and absolute certainty demanded as sole justification for governmental regulation of carbon emissions, the natural complexities of the climate system are depicted as beyond the comprehension of current climate science. It is thus declared, “our greatest danger [is] not ignorance but the presumption of knowledge” (“Climate Change and National” 2). Should this argument be insufficient, mainstream climate science is further charged with a compromised status due to alleged politicization, subjective judgment, and perpetuation of an institutionally pervasive bias.

It is useful to remember the MI's flexible attitude towards the issue of certainty. In discussion of missile defence, substantial uncertainty is deemed insufficient to hinder immediate enactment of responsive measures. By contrast, it actually justifies such actions: "given the uncertainty in predicting where, when, and by whom missiles might be launched – and what their targets may be – there is a need for constant defenses capable of intercepting missiles irrespective of their geographic origin" ("Missile" 10). The unstated premise of this claim is that the threat itself is definite. Contingency is central to life, whether the act in question involves stepping out one's door, conducting business transactions, or commencing a military campaign. It is difficult to articulate any realm of life that involves certitude. However, the reassertion that such certainty is possible situates the MI for an attack on dominant scientific belief.

Climate complexity / knowledge deficiency

Two chief complications threaten to hinder the MI's project. First, its targets are scientists: sceptical, reason-driven experts within their respective fields. Second, the IPCC is by its structure a collaborative organization, designed in order to shield its conclusions from accusations of institutional bias. Anticipating attempts to shift blame for climate change to naturally occurring phenomena, the Fourth Assessment methodically "considers the results of new attribution studies that have evaluated whether observed changes are quantitatively consistent with the expected response to external forcings and inconsistent with alternative physically plausible explanations ("Climate Change 2007" 8).

The IPCC neither generates its own data nor carries out research. Its publications are comprehensive reviews which analyze, synthesize and summarize the best scientific,

technical and socio-economic information on global climate change available in peer-reviewed and internationally available literature (“How the IPCC works”). To ensure scientific integrity, the peer-review process is rigorous, transparent and open to participation from scientists across the spectrum and all member governments. As a result of this extensive two-stage scientific and technical review process, their official projections are conservative, but fortified against accusations of bias. Evidence of these reports’ credibility is found in the fact that, “Over the course of its three assessments, the IPCC reports have been unanimously agreed upon by the more than 150 countries involved, and later endorsed by the academies of science of all the major nations” (“What is the IPCC?”).

Acknowledging the uncertainty inherent to all predictions of future climatic variations, the IPCC offers the following introduction to their organization and its aims:

Because climate change is such a complex and challenging issue, policymakers need an objective source of information about the causes of climate change, its potential environmental and socio-economic impacts, and possible response options.... The Panel’s role is to assess on a comprehensive, objective, open and transparent basis the best available scientific, technical and socio-economic information on climate change from around the world. The assessments are based on information contained in peer-reviewed literature and, where appropriately documented, in industry literature and traditional practices. They draw on the work of hundreds of experts from all regions of the world. IPCC reports seek to ensure a balanced reporting of existing viewpoints and to be policy-relevant but not policy-prescriptive. (“Introduction” 1)

It is important to read the MI’ s criticisms of climate science in light of this passage. For it anticipates the accusations to be levelled against the IPCC by organizations such as the MI. Denoting the consequence of word choice, the attributes selected to define its working process, “comprehensive, objective, open and transparent”, are equivalent to those claimed by the MI. The IPCC further attempts to forestall charges

of political bias through the assertion that their findings are “policy-relevant but not policy-prescriptive.” Perhaps most significant, however, is the articulation that their reports are based upon the “best available” information. Within a field of substantial complexity, this is all that may be achieved.

Science involves the systematic examination of issues; it is a search for probabilities subject to trial and revision. Yet the knowledge generated by such method invariably results in new unknowns, and future research is always required. As a consequence, dearth of certainty may be employed to motivate public disbelief of compelling evidence. This tactic is particularly germane in the context of climate science, for due to its focus on the future, all hypotheses are anchored within the sphere of uncertainty. Further, authoritative scientific projections and communication of hypotheses require the tracing of patterns across broad sets of data and substantial time frames. In order to achieve full significance, disparate studies must be linked into configurations of probable relations. The poet T. S. Eliot once wrote, “the historical sense involves a perception, not only of the pastness of the past, but of its presence” (499). While these words referred specifically to poets’ need to situate their respective works within a broad time frame, they thus also apply to those working in the field of climate science. Without such historical sense, individual conclusions may be trivialized through obfuscation of the causal relations between diverse events. The result is an assortment of isolated and fragmented scraps of evidence, each incapable of sustaining a substantive claim.

Crucial here is the fact that it is often far easier to promote doubt than prove certainty, particularly when the latter requires also the justification for potentially

destabilizing action. Faced with an authoritative body of evidence indicating the existence of anthropogenic climate change, the MI exploits this phenomenon and elects to attack the adequacy and predictive capacity of science itself. Elaborating upon their previous assertions regarding the possibility of achieving objective certainty, the MI depicts the knowledge constituting the field of climate science as hypothetical and provisional.

In May 2005, the MI published an article which claims, “We may agree on a set of facts but not on inferences drawn from them or actions that they justify” (“Climate Change and National” 1). While this statement reasserts the MI’s opposition to the regulatory actions prescribed by the IPCC, it is relatively benign in its characterization of mainstream science. However, this charity was transitory. Reference to a shared “set of facts” soon evaporates, replaced by a repeated assertion that within the realm of climate systems, scientific knowledge is overwhelmed by the natural climate system’s overwhelming complexity. Indicative of this tactic is the claim, “The scientific level of understanding of the direct effects of greenhouse gases is high, but the scientific understanding of the other drivers of the climate system is low or very low” (“Climate Issues” 20). Yet while this passage demonstrates allusion to climatic complexity, more illuminating still is the statement:

We may, with much better scientific understanding and validated climate models, predict a range of potential human impacts on the climate system, but we will always be uncertain about the natural climate to which that human impact would be added. (“Natural” 4)

By asserting that natural climate drivers will forever remain a mystery, the MI extends its argument to effectively charge all climate science with irrelevance. No matter how much models advance, the equation’s fundamental component will always be lacking.

Characterizing science as a blind guess in the dark, they reassert, “mathematically, the climate system exhibits “chaotic” (i.e., complex and nonlinear) behavior, which means that it has limited predictability” (“Climate Issues” 26). Regulations based upon the findings of climate science, then, would simply mirror its speculative vagueness. Climate predictions, it is suggested, are rather like having a wine-tasting underwater: any conclusion is doomed from inception.

The MI claims that its intention is “to separate fact from speculation and to demonstrate that while concerns are legitimate, there is not a robust scientific basis for drawing definitive and objective conclusions about the extent of human influence on future climate” (1). It thus bases its argument upon a qualitative distinction between adequate and insufficient evidentiary grounds. Stating, “At present there are no robust estimates of natural climate variability on the decades to centuries timescale that is essential” (“Natural” 1), the MI insists that current data is insufficient to validate any predictive claims regarding the potential consequences of uninterrupted current economic practice.

This argument pivots upon the reliability and accuracy of climate modelling computer programs. In defence of their use of such models, the IPCC states:

A major advance of this assessment of climate change projections... is the large number of simulations available from a broader range of models. Taken together with additional information from observations, these provide a quantitative basis for estimating likelihoods for many aspects of future climate change. (“Climate Change 2007” 10)

The MI correctly notes that such models, based as they are on human projections and current knowledge, are necessarily based on degrees of probability. However, its target is not such models, but the field of climate science itself. It thus mobilizes this element as

iconic to the field in an attempt to cripple the entire project: “Since models are the only way to project future climate, our lack of understanding of key climate processes means we lack the ability to accurately project future climate” (“Climate Issues” 13). Once again, the key distinction is that between total certainty and warranted probability. Because wholly conclusive data is illusive, this equals a call for sustained inaction.

Yet climate science has determined several irrefutable facts. To maintain a claim to scientific credibility, the MI is obligated to acknowledge these points. After this token gesture, it is free to argue that the significance of such facts is minimal. Combining an acknowledgment of accepted conclusions with an attack on the limits imposed by reliance on computer modeling, it argues:

No one disagrees that the climate is changing. It always has and always will. No one disputes that global warming is real, that carbon dioxide emissions have been increasing or that the world is warmer today than it was 100 years ago. Beyond those few undisputed facts, most of what was presented about future climate impacts was nothing more than results of complex computer models. Models are useful research tools, but they are not science. (“Reply” 1)

This tactic of contrasting the subjective dimensions of climate science to the ostensibly objective realm of hard science in other fields of inquiry is by now familiar. However, the MI extends this opposition to its farthest reach by comparing modern climatology to medieval astronomy:

The chaotic nature of the climate system... suggest[s] that natural climate variability is substantial and difficult to define. Looking at the mass of information now available on the factors contributing to natural variability, one is reminded of the models medieval astronomers built to try to explain the observed movement of the planets with a theory that placed the Earth at the center of the universe. All of this complexity was swept away first by Copernicus’ discovery that the Earth and the other planets revolved around the Sun, then by Newton’s discovery of the laws of gravity. Together, these led to the precise understanding of the solar

system that allows us to accurately send probes to the outer planets.
("Natural" 13)

Implicit in this passage is the understanding that modern scientific process, that which permits extended space travel, is personified by the MI itself. Reference to Sir Isaac Newton, the personification of science itself, serves to amplify the MI's scientific prestige while the concurrent admission of human knowledge limitation allocates them the virtue of humility. By contrast, the contributors to the IPCC are associated with pre-heliocentric thought and assumed to have negligible understanding of even basic physics. This charge of incompetence is but one of multiple efforts to discredit the motivations behind, and thus the conclusions of, the established scientific community.

Political and economic bias

The common bond that holds this active consensus together must be made unequivocal: It is the common defense of the American people themselves, where danger knows no boundaries among them, that is the business at hand and must be attended to quickly. The message should be honed down to a single word with a clarity everyone understands: Enough.
("Missile" 83)

The work of science has nothing to do with consensus and that consensus is the business of politics. ("Group" 2)

Barney observes, "the case for progressive reform... has been built on a conviction that science and technology are irreducibly political and thus should be subjected to democratic struggle, judgment, and control" (656). Questioning the efficacy of this stance, he notes the possibility that it may undermine the left's capacity to lobby on behalf of cherished beliefs. For example, within the context of the U.S. debate pitting Darwinism against intelligent design, proponents of the latter may readily exploit such a

claim on behalf of their own beliefs. It is, in other words, a convenient way to disregard the body of scientific evidence.

This same tactic is employed by the MI. In order to denigrate the IPCC's recurrent affirmation that scientific knowledge is sufficient to justify immediate international governmental action, the MI at times shifts its attack from the realm of generalities towards one more specific. The IPCC, it asserts, simply "[takes] a few facts, about which there is no disagreement, and use[s] them to construct a story that is mainly opinion presented as though it was science-based fact" ("Reply" 1). As observed by Hall, "[an] event must become a 'story' before it can become a communicative event" ("Encoding" 167). In other words, the IPCC's findings require interpretation before they achieve true social significance. The MI capitalizes on this point by attacking the professional and ethical credibility of those scientists whose voices contradict its preferred interpretations.

Considering its adversary's broad international authority, the MI faces a difficult battle. Further, the prospect of calling into question all scientific knowledge is decidedly unattractive. Aspiring to drive a wedge between the project of science at large, and climate science in particular, the MI thus strives to divorce the former from the latter. By this means, it hopes to create a discursive space which will accommodate an attack on the IPCC whilst remaining hospitable to the idyllic characterization of science's objective foundations.

A stunning exception to this strategy is found in an interview by the authors of Shattered Consensus, a text which purports to discredit the notion of scientific consensus

on the issue of climate change. Protesting, “The issue of consensus arises largely through the refereed scientific literature,” the author states

On September 7, there were fifteen separate news stories on global warming that were available on Google.... Each of these originated in a scientific article. Fourteen of them were “it is worse than we thought.” One of them was “it might not be as bad as we thought.” Consider the daily weather forecast for, say, three days from now. Additional information will move that forecast either up or down. Every twelve hours when weather balloons are sent up, that forecast has a fifty-fifty chance of being moved warmer or a fifty-fifty chance of being moved colder. The same with climate science. Every new piece of information has an equal chance of moving the fore-cast into a warmer world or into a less warm world. Fourteen out of fifteen coins tossed will yield only one head one in two thousand times. (Frauenfeld et al 14)

Were this depiction of empirical evidence the finest argument the MI could muster, its project would be inconsequential. However, this passage is atypical; a more frequently employed device is disputation of individual scientists’ motivations.

It is thus argued, “there is a growing gap between what an informed citizen needs to know and what he can know. In such a world, ambiguity, intimation and images can overwhelm experience and reality” (“Evaluating” 2). Responsibility for such mystifying tactics is accorded to mainstream climatologists, individuals whose public statements are but “scare tactic by advocates to advance their agenda” (“Reply” 2). Repeating this allegation, the MI laments, “Since the embargo of 1973, energy policy has been driven by political entrepreneurship and crisis instead of vision, reality, and political will” (“Climate Change and National” 5). These words are significant both for the nebulous intangibility of their proposed alternative, and for their discordant suggestion that sound policy is dependent at least partially upon “political will.” For perceived affiliation of politics and science forms the MI’ s basic argumentative grounds. Those charged with engaging in such practice are the MI’ s targets:

Concerns about climate change have resulted in some scientists entering the policy debate because of alarm about either the potential impacts of climate change or the economic impact of ill-conceived policies. Others, unfortunately, have entered the debate to advance political or economic agendas, gain funding for research, or enhance their personal reputations. To the extent that the debate is carried out in the public policy arena or media, the rigors of the scientific process are short-circuited. (“Climate Issues” 1)

Of note here is the initial equation made between those scientists who enter the debate due to environmental concerns, and those who enter prompted by economic concerns which might result from “ill-conceived policies.” By presenting these two guiding concerns as oppositions, the MI implies that scientists speaking on behalf of environmental conservation are necessarily ignorant of economic matters. This distinction is false, for there is no reason for the two categories to be mutually incompatible. Environmental concerns may be addressed as part of a comprehensive plan which fully considers specific policy decisions’ potential economic consequences.

Of further significance is that the potential threats posed by climate change are uncontested here; the implied debate thus hinges upon the question of what constitutes an appropriate response. Crucially, those whose sole motivations for entering the debate are to warn against the costs of governmental action are afforded a privileged stance. This turn attempts to ground the debate solely in the sphere of economics, a strategy whose operations I consider in the conclusion of this thesis. Suffice for now to say that such a debate would peripheralize the expertise of climate scientists.

However, the most critical aspect of the above passage is the allegation that scientists warn of the dangers posed by climate change in order to “advance political or economic agendas, gain funding for research, or enhance their personal reputations.” The association of unfavourable scientific evidence with compromised motivations is central

to the MI's strategy. It also stands in direct contradiction to the MI's recommendation that, with regards to missile defence, the U.S. government fully mobilize political apparatuses in support of predetermined ends. For the MI suggests that the U.S. "Raise the profile of missile defense at the highest echelons of the U.S. government through bipartisan consensus building," and "Foster a cadre of sympathetic members and professional staff in the U.S. Congress" ("Missile" 117). When contrasted to its claim that "[when] debate is carried out in the public policy arena or media, the rigors of the scientific process are short-circuited," this argument is of critical import. If one reads this last statement literally and isolated from its context, she could be forgiven for assuming the MI is a staunch supporter of scientific expertise and interpretive authority regarding the natural world. This is definitively not the case.

Science, ethics and judgment

Commenting on the case of missile defence, the MI states, "political considerations have primarily shaped technical behavior that far too often has been designed to achieve certain predetermined political ends ("Missile" 117). In this instance, the MI demonstrates a unified perspective towards each issue, for this claim could serve also as a summary of its indictment of the IPCC. Once more, science is depicted as the realm wherein hard, concrete facts are produced through objective methodology. Drawing upon the distinction between this epistemological stance and one leaning towards an interpretive conceptual framework, the MI thus situates itself for an assault upon a fundamental dimension of scientific practice: the judgment and predictive explanation of raw scientific data by qualified scientists. All meaningful facts require a human interpreter and communicator. But when pure science is held to consist simply of

empirical data, there is no space for scientists to interpret the significance of such findings (particularly in relation to each other).

It is important here to distinguish between the sphere of science, wherein hypotheses and conclusions are constructed, and that of politics, wherein the plausibility and efficacy of varying proposals is debated. Scientists' authority is derived through their expertise in the domain; within the realm of the politics, conclusions form the basis for policy decisions based upon probabilities and made by individuals authorized to do so. By attempting to conflate these two social spheres, the MI charges the IPCC's recommendations with political contamination.

Towards this end, the MI draws a distinction between detection and attribution: "Detection of climate change is the ability to say, with some degree of confidence, that the climate has changed. Attribution of climate change is the ability to say, with some degree of confidence, why the climate has changed" ("Response" 5-6). By rightfully articulating the qualitative dimension of scientific practice, the MI foreshadows their attack on subjective judgment. It is of note that, due to the MI's difficulties in finding reputable sources for its views, economists and scientists whose judgments are sympathetic are spared any such accusations. The IPCC, however, receives no such leniency.

It is thus asserted, "The IPCC is often characterized as a scientific body. But, in fact, it is a consensus organization by design" ("Group" 3). One might argue the redundancy of this statement, for the broader project of science is inextricably linked to the goal of consensus. Scientific knowledge and laws are gradually accumulated, accepted and revised as the institutionally authorized scientific community deliberates

and eventually validates individual theories. Once a theory has achieved sufficient endorsement, it is redefined as a law. The IPCC's mandate is no exception to this practice. Its task is to examine a complex issue and offer a summary of the best available refereed literature on the subject. The resulting publications' force stems from their authorship and sanction by scientists of the highest technical proficiency.

In an attempt to obscure this fact, the MI disregards the notion of expertise; its critique is levelled generally, against all forms of judgment. Scientists who warn of the dangers posed by climate change are charged with having "suspended their reliance on the scientific approach and replaced it with reliance on hypotheses and their belief system. They are using their scientific credentials as currency in the political process" ("Group" 2). Evaded here is consideration of how such scientists achieved their credentials in the first place. The reader is encouraged to imagine a horde of fledgling scientists, all labouring for years to earn the institutional right to claim interpretive authority. Having finally achieved this accreditation, however, these individuals employ it solely to advocate their private political beliefs. The MI's proposed solution to this professed dilemma is that "The IPCC eliminate the practice of assigning probabilities or likelihoods based on expert judgment" ("Reforming" 2).

Direct contamination of individual scientists' motivations is not the only factor ostensibly undermining the IPCC's reports. Arbitrary deployment of statistical evidence is additionally targeted. Commenting on assumed lax standards, the MI complain that: "The IPCC define[s] *likely* as having a 66-90% chance of being true in the expert judgment of the authors who [draw] the conclusion" ("Climate Issues" 24). This aspect of the MI's argument is difficult to defend. Defining a probability of 66-90% as likely is

entirely reasonable, particularly when such odds are transferred to the spheres of military or financial affairs. Were an assurance in excess of 90% demanded for action in these realms, one might encounter a stunning shift in global politics as mattresses were stuffed with bills, and tanks and airplanes grounded. With regards to the weakest odds in this span, even a probability of two-thirds is strong justification for many actions. Yet the MI is relentless. Maintaining its stance, it simply reaffirms, “probability estimates make it clear that these are subjective judgments; not probabilities that have been calculated with actual data. Instead, they are no more than the subjective assessments of the people involved in the IPCC process” (“Response” 5).

If intuiting the future becomes a commonplace in the world of science, perhaps unequivocal empirical evidence for events thirty years from now will become available. However, that the current lack of such powers necessitates reliance upon informed probability estimates has not arrested all international investment and trade. It must be re-emphasized that the contributors to the IPCC’s reports are, in contrast to the authors of MI’s publications, amongst the world’s leading experts in the field of climate science. Confronted by a strong majority of scientists whose views contrasted with their own, the MI is thus required to suggest as many weak links in the IPCC’s structure as can be imagined. The claim, “The IPCC is controlled by a group of scientists appointed by their governments” (“Group” 1) indicates the MI’s next target. Shifting criticism from scientists to the assumed source of their encouragement, it censures the politically adulterated function of national governments.

The politics of funding

The MI's decision to broach the issue of funding is precarious. For although it provides an additional opportunity to attack mainstream climate science, it threatens to initiate unwelcome attention to its own financing by private corporations. Well aware of their compromised status, the MI states:

All too frequently evidence of a financial tie is sufficient to condemn, without proof that the tie altered the views, opinions, or conclusions in any way. The public discourse suffers as arguments are not explored in sufficient detail. Unfortunately, we seem to live in an age that places a higher premium on finding problems than on asking questions and finding answers. ("Funding" 1)

This argument is of course necessary. In order to be taken seriously within the debate, the MI must neutralize the significance of its corporate financial ties. Questioning the necessity for a link between a donor's beliefs and a recipient's actions is merited. However, this constructed binary is facile; there is no sharp delineation between, on one hand, positive dialogue, and on the other, unfounded cynicism regarding the potential pressures funding may exert on research.

The MI's contradictory application of this argument is notable. For immediately following the denial of funding's influence on public debate, it charges opponents with compromised status due to this very phenomenon. It argues:

We are also troubled by the fact that your focus on Exxon Mobil funding ignores significantly larger funding of environmental advocacy groups that promote the Kyoto mindset and issue inaccurate and misleading statements in pursuit of their policy preferences and agendas. We would never call for organizations to stop funding them because in free and open societies, free speech and the right of dissent are virtues, not vices. ("Response" 2)

This last sentence attempts to bury the matter of their own financial allegiances under the mantle of the First Amendment. Trusting that, through self-identification with the

principle of free inquiry, ethical high ground has been successfully appropriated, the risk associated with mobilizing this issue is deemed acceptable. Thus, despite the claim that “We would never call for organizations to stop funding [environmental advocacy groups]”, the MI proceeds to do just that.

It declares, “Economists have long noted the role of self interests in promoting government action which always produces winners and losers” (“Climate Change and National” 1). While this statement could be interpreted as an admission of comprised stance on the issue, the desired effect is that audiences cast blame in the opposing direction. Governments around the world, the MI suggests, have decided that they wish to promote anthropogenic climate change as factual (their reasons for welcoming the prospects of energy insecurity and environmental chaos are not elaborated). As a consequence, they pressure climate scientists to conform to this pre-determined conclusion; those who comply are rewarded with financial incentives.

Activating this argument, the MI claims, “Climate change alarmism is good for business” (“Group” 4), and “Scientists and research organizations have a strong incentive to investigate problems and raise questions that justify more grants” (“Group” 3). This last claim is discordant, for it indicates that climate scientists are in fact encouraged to raise further questions. While this practice is a central function of science, it corresponds with the MI’ s call for knowledge advancement and thus runs counter to the claim that economic inducements manifest a false state of consensus.

Less convoluted are assertions that “Public funding can generate unwelcome pressures on scientists to conform to prevailing beliefs (“Group” 3), and “The special interests and advocates who gain from an apocalypse scenario will fight hard to maintain

the illusions that have proven profitable (“Climate Policy” 1). These last two accusations raise a vital question: if public funding encourages partisan research, from which sources should funding arise? The MI’s answer stems from the proposition that because government funding is inextricably political, public universities are incapable of conducting credible scientific research. The proposed alternative is that research rely upon financial grants from (neutral and apolitical) private corporations, a recommendation that meshes well with the MI’s own situation. Casually neglected in this argument is the fact that universities receive public financing precisely because it allows them to execute their research mandates without reliance upon corporate support, thereby avoiding the pressures it might exert towards specific conclusions. This rationalization further hinges upon the contention that governments are for some reason pervasively predisposed towards enacting measures which would reduce their nations’ respective CO2 emissions.

That the MI’s Washington D.C. neighbour, the White House, refused to ratify the Kyoto Protocol and has remained predominantly dismissive of world scientific opinion, is in conspicuous contradiction to this argument. Consider the charge levelled against the Bush administration’s political interference with science by Dr Jim Hansen, head of NASA’s Institute for Space Studies and adjunct professor in Columbia University’s Earth and Environmental Science Department. In testimony to U.S. Congress on March 19, 2007, Dr. Hansen alleged that the White House administration has attempted to “make the reality of climate change less certain than the facts indicate, and to reduce concern about the relation of climate change to human-made greenhouse gas emissions”. This goal was enacted through a systematic campaign, involving the censoring of unwelcome

voices and politically-motivated editing of scientific papers, to trivialize the threat posed by climate change (“Bush appointees”).

Nonetheless, the notion of governments’ collective environmental bias is integral to the MI’ s strategy, and forms the basis for the assertion that universities in general have “an alarming degree of dependency on federal support” (“Funding” 10). This aversion to governmental interference with scientific process is a mirror image of that levelled by the Union of Concerned Scientists. Yet each association approaches this claim from a different direction. The MI suggests that the U.S. federal government has pressured scientists to generate evidence that corroborates the existence of climate change. The UCS, by contrast, argues that through the exertion of political pressure, the same government has muzzled U.S. scientists who endorse the IPCC’s conclusions (“Political Interference”).

The most cursory examination of the Bush administration’s record on the issue, most pointedly its refusal to ratify the Kyoto Protocol, indicates the inaccuracy of the MI’s contention. Perhaps in acknowledgment of this shortcoming, the MI has generalized its accusation, broadening it to the point that it encompasses and compromises all large bureaucratic organizations such as the IPCC:

This dependency is indicative of the relationship between governmental bureaucracies designed to distribute public resources and the private sector entities who receive that support. Both have strong incentives to maintain and expand the relationship as it reinforces their mutual interests and, studies of bureaucratic politics suggest that both can be expected to act in ways that facilitate that result. (“Funding” 11)

Absent here is any discussion of governments’ subsidizations of the oil and gas industries. The U.S. government’s allocation of funds to the MI’ s other pet project, missile defence, receives similar immunity. Indeed, in comment on this latter project, the

MI offers a differing depiction of government/university relations. In support of the creation of a national missile defence strategy, it calls upon the U.S. government to “Restore federal support for, and funding of, physical science research and engineering” (“Missile” 115). This stance is reiterated in a demand that the U.S. government “strengthen federal support and funding for physical science research and engineering” (“Missile” xi). The paradox inherent in this claim is familiar. And despite the MI’s recurrent championing of free speech, and correlated complaint that their organization is unjustly demonized by mainstream science, neither should its next tactic be. Returning to the sphere of the individual, the MI initiates character assassination.

Orthodox irrationality

What is often referred to as a “consensus” is anything but. Many of those making this claim hold a particular point of view that is based on their “expert judgment,” not established scientific fact. For others, especially those engaged in advocacy, the claim of consensus is used to advance their agenda. (“Climate Issues” 1)

Purely scientific appraisals are often politicized and misused by interest groups. (“About the Marshall”)

In contrast to the MI’s self-declared ethical high ground (that defending reasoned, open debate), scientists whose views oppose its own are charged with the various negative traits of haste, extremism and elitism. Fundamental to this argument is a particular definition of the concept of precaution; by framing this virtue within the realm of economics rather than ecology, the MI is able to associate those who call for environmental conservation with not measured and conservative action, but hysteria. The argument essentially proceeds thus: dominant scientific thought has decreed it fashionable to advocate anthropogenically induced climate change. Those who dissent

are ostracized. The result is an assumed “drive for consensus” (“Response” 1).

Consider again that the MI’s simultaneous call for construction of a “broadly based national consensus for a robust layered [missile] defense” (“Missile” xi) contradicts this argument. In the context of this latter issue, it must be assumed, strict reliance on hard scientific data is unnecessary. But in the sphere of climate science, matters change. Thus, in support of its prescribed conceptual model, the MI encourages an equation of dominant science with tyrannical conformity:

The important point is that as our knowledge expands, more data is gathered, and additional creative energy is applied to the questions, what we believe to be true changes. Given such a fluid state of affairs, that reasonable minds might disagree is not only likely, but ought to be encouraged lest we become blind to evidence that challenges the prevailing orthodoxy. (“Response” 7)

Derived from this blueprint, two specific accusations are paramount. First, environmentalists are elitists. Second, their worldview is grounded in dogma. Addressing the first of these charges, the MI calls once more upon the author of Jurassic Park: “Scientists who should know better are seduced by the notion that they are part of the entitled class for governing society” (“Group” 3). A fuller articulation of this argument is found in the assertion:

[M]any environmental groups have evolved toward one overriding objective—to impose limits on human and economic activity. It is (sic) dominated by elites who believe themselves superior in determining how the future should unfold and how human aspirations should be satisfied. Their underlying belief is that economic growth and rising standards of living unless achieved by their dictates are a serious threat to global sustainability. The way in which they promote their views is characteristic of a religion. Religions rely on faith over proof and accept prescribed beliefs without doubt. (“Group” 2)

This passage effectively establishes a hostile division between those who speak on behalf of environmental conservation, and those who believe, rather, in “human and economic

activity.” Interpreted literally, this implies that conservationists wish above all for humanity to immediately perish. The declaration of environmental elitists’ desires to stifle “human aspirations” is consequential, but its key function is to equate environmental concern with religious fervour. An excellent way to discredit science is to couple it with its arch-nemesis, faith (by nature incongruent with empirical thought, and in this case of the dogmatic, orthodox variety). It is this very match that the MI attempts to secure.

Declaring their opponents’ collective irrationality, the MI warns against the dangers of “distortion in public discourse” (“Group” 3), and argues that “reality will still have a hard time over coming (sic) entrenched interests and zealotry” (“Evaluating” 3), for “image has replaced fact in communication and, as a result, reality is now tested against images instead of the reverse” (“Reply” 1). Together, these allegations constitute a sustained indictment of both the motivations behind, and communicative practices of, the mainstream scientific community. This pattern reaches a zenith in the MI’ s personal attack on Al Gore: “Waving his magic wand commanding solutions will not make a tough challenge easy. It does, however, make the task of promoting understanding and realistic expectations harder” (“Climate Zealotry” 3). This reference to magic wands, beyond characterizing Mr. Gore as a fairytale-believing, starry-eyed novice, is designed to emphasize the MI’ s own pragmatic attitude towards the issue. Portraying itself as defender of both common sense and practical considerations, the MI trivializes opponents’ views as the culminations of bigotry and “rigid dogma” (“Response” 3), thus attempting to castigate them to the debate’s peripheral wings.

Continuing the attack on Mr. Gore, the MI asserts, “zealotry brooks no dissent. Self righteous arrogance and excessive certainty that reject alternative points of view or the possibility of error are not admirable qualities or a basis for forming national and international policy” (“Climate Zealotry” 1). While these sentiments are admirable, they have minimal relation to Mr. Gore’s depiction of climate science. Nonetheless, the MI rails against the conclusions of “a group of scientists who have become victims of Group Think” (“Group” 1) and argues, “striving for consensus overrides the members’ motivations to realistically evaluate alternatives. Group pressures for conformity lead to a deterioration of mental efficiency, reality testing and moral judgments” (“Group” 1).

The image prompted by these claims, that of several thousand highly trained scientists being herded like sheep by an unnamed malevolent force, is striking. Yet more significant is the claim that “environmentalists’ beliefs show no flexibility” (“Group” 2). For this simple accusation raises questions pivotal to the entire debate. Chiefly, are facts absolute? This statement can be interpreted in several ways. In the first, scientific facts are concrete; flexibility of belief indicates the politicization of scientific evidence as opposed to sole reliance on hard data. However, a second reading more accurately summarizes the epistemological framework within which the MI attempts to demonstrate environmentalists’ communal bias. In this latter scenario, environmentalists are assumed to have declared allegiance to a particular interpretation of the world, one with no relation to existing scientific fact. This worldview is then adhered to in a rigid manner, regardless of the continual evolution of scientific knowledge. Further, it is self-propagating; those who share its fundamental tenets reward and encourage each other’s continued inaccuracies. Summarizing this argument, the MI claims:

For almost two decades, the climate debate has been dominated by advocates and environmental ministries, primarily those from the European Union. They used the image of a distant environmental apocalypse caused by human activity to fashion an unsustainable and unachievable treaty and to demonize any one who questioned their orthodoxy. That orthodoxy holds that climate science is settled, that humans are the major cause of warming in recent decades, and that there is only one way to avoid a climate-induced apocalypse later this century. That one way is to drastically reduce greenhouse gas emissions to levels 60% below 1990 levels by 2050. That orthodoxy is not built on observation, measurement, validation, and objective analyses, which are the bases of scientific information and sound policy. (“Climate Policy” 1)

Critically important here is the MI’ s strategic redefinition of scientific consensus as “orthodoxy.” As observed by Myra MacDonald, “The meanings we attribute to words and images depend on cultural assumptions, and help, in turn, to perpetuate these” (9). By encouraging the public to falsely equate scientific consensus with orthodoxy, the MI mines a deep cultural aversion to the union of science with faith.

Gordon McBean, former assistant deputy minister of the Meteorological Service of Canada and professor at the University of Western Ontario, contests this characterization of the scientific community. He states that the belief human activity is altering the gases in the atmosphere and causing the planet to warm “is the consensus view of 80 to 90 per cent of the climate scientists in the world” and further argues, “Whenever you hear from the skeptics, think consciously that there are at least as many credible scientists who would go beyond on the other side of the issue.” Echoing this view is that of Dr. Andrew Weaver, a leading author of the IPCC’s 2007 report, who states that although corporations such as the MI claim there is no substantial evidence of the dangers posed by anthropogenic climate change, the IPCC “presents 1,600 pages of compelling evidence” (“Harper”). In light of this body of knowledge, the United Nations Foundation is justified in asserting: “the research of a few scientists who may hold

dissenting views—whether their research is published subject to peer-review or not—at best will add only a small bit of information to a very large body of well-reviewed, established knowledge” (“Climate Change Misconceptions”).

The IPCC is a formidable adversary. One solution to this dilemma lies in the principle of selectivity. For “by choosing its experts, [an organization becomes] judge and jury in this social debate” (Livesey 129). By presenting themselves as authorities of scientific expertise in defiance of world scientific opinion, the MI demonstrates its imaginative flair.

But there is a more pervasive dimension to its argument.

Chapter Five. Economic salvation

Diversifying sources of oil, maintaining a healthy strategic reserve, promoting democratic institutions in producing countries, promoting free and open trade and committing to a vigorous, science driven energy R&D program are the best ways to reduce the risks of disruptions and promote economic security. (“Climate Change and National” 5)

The MI strategy examined thus far involves two principal contentions. First, scientific knowledge is insufficient to justify actions which may engender substantial economic costs. Second, political and economic motivations compromise the credibility of those scientists who suggest otherwise. The third pillar of their argument re-mobilizes the concept of proaction. The Pew Centre on Global Climate Change argues that effective engagement with the issue requires both implementation of mandatory greenhouse gas reduction programs, and development of technology and market mechanisms. While the first of these recommendations is deleterious to the MI’ s aims, the second is sympathetic. Disregarding the unwelcome half of the equation, the MI thus affirms: should the climate threat be genuine, salvation will come in the form of corporate technological innovation, embedded within and driven by the market economy

The market

Logic is a powerful force. It persuades through the application of proofs, whether genuine or apparent, and claims adherence to the process of rational deliberation. This practice indicates the significance of naturalized assumptions, for enthymematic appeals (incomplete syllogisms) rely upon audience participation for their completion. Such

intellectual cooperation encourages commitment to the argument at hand. Yet because an integral element of a complete logical argument is left unstated, there is danger that the omitted premise is inaccurate. If the false premise derives from an established assumption, one may mistakenly identify with a truth-claim on the grounds that it appears to stem from logical reasoning.

In this phase of the MI's strategy, the crucial, unstated premise is that the economy forms the basis of social health. From this conceptual origin, the MI proceeds to elaborate upon both the virtues of the socio-economic status quo, and the dangers threatened by governmental interference with its mechanisms.

Technological innovation

Arguing, "technology and not energy starvation is a better road to take" ("Climate Zealotry" 3), the MI advocates a set of policies which congregate under the metaphor of the neutral market economy. Elucidating this position, it states, "There is a moral imperative to ensure that future generations enjoy greater prosperity which can be achieved only by maintaining a strong economy and promoting the innovation needed to keep it strong" ("Climate Zealotry" 3).

Such a model pays no heed to the relation between environmental, and social quality standards. The economy is depicted as both provider for and guarantor of social health and progress. Within this entrepreneurial framework, welcome innovations are assumed to arise within a precise domain: the corporate sector. In contrast to its portrayal of climate science as either deficient or biased, corporate volunteerism is heralded as the means by which to achieve technological, environmentally-beneficial breakthroughs.

Conspicuously, this belief implies technology's passive neutrality, a premise integral to the MI's prescribed response framework.

Heralding the promise of financially-driven private innovation, the MI claims:

Energy is a cost, and businesses and consumers, have real incentives to reduce costs where it makes sense to do so. Today's prices are almost certainly stimulating further improvements in energy efficiency and impacting changes in our capital stock. But, those improvements take time to become evident. ("Climate Change and National" 4)

Beyond its familiar call for patience, this passage is notable for its prescribed reliance upon market mechanisms. As noted by Sharon Livesey, within such a framework, "the market functions as an ostensibly neutral and apolitical arbiter of competing social interests" (135). This model, it is suggested, provides the stimulation required to assure the development of efficient technologies which may diminish any negative impacts of climate change.

In an exemplification of argumentative self-reinforcement, the MI thus demands that its audience "[accept] the fact that abundant, competitively priced energy is essential for a robust economy. And, a robust economy is essential for the R&D needed to bring forward new and more secure sources of energy" ("Climate Change and National" 6). This formula seems effective due to its circular insularity. If one accepts the premises that, first, economics are the paramount social consideration, and second, any restriction of CO₂ emissions will cripple national economies, then there is no access point for critique. Here, "Uncertain knowledge about nature has thus been exchanged for certain truths, [from a] commercial perspective, about what constitutes basic social necessity" (Livesey 130). The sole certainty in this equation is the potential for economic (and thus social) harm wrought by ill-founded governmental regulations. Not only is climate

science still insufficiently conclusive to justify such actions, their implementation would hinder society's best hopes for ameliorating the problem should it eventually prove genuine.

Within the MI's proposed responsive framework, government is thus to play a "supportive," as opposed to a regulatory role. Its chief function is to create and defend a socio-economic environment congenial to corporate technological development. The MI thus draws upon the values of Classical liberal thought: humanity is characterized as an aggregate of rational, utilitarian individuals, and governmental regulation threatens to interfere with the private sphere. To heed the IPCC's recommendations, it is argued, governments will be required to transgress individual freedom: "government action would be needed to induce or seduce people to purchase something that they have chosen not to" ("Climate Change and National" 5). Worse still, "achieving a reduction in emissions would require government controls on the type of vehicles sold" ("Climate Zealotry" 2).

Such a position stands in stark contrast to the MI's suggested role for government within the context of missile defence. For with regards to the latter, it calls for state adoption of an explicitly interventionist stance involving legislation, regulation and selective funding of research initiatives. Of note is the re-mobilization of idealized democratic practice. The MI argues, "the government has failed to provide effective missile defense largely because the demand for it has not been strong enough to overcome the demand against it" ("Missile" 56). This claim is echoed in the call for "direct citizen participation in demanding necessary government action" (83). Beyond its assertion that governmental regulatory action is, in this instance, welcome, this argument

brings into conflict two discrete convictions regarding the foundations of sound policy. On one hand is public advocacy; on the other, hard scientific data and expertise. This admission breaches the MI's fabricated distinction between pure and contaminated science. To divert attention from this fact, it enlists the support of a sturdy ally: fear.

Health / harm binary

Statements emphasizing the partial and inadequate nature of current scientific knowledge ultimately serve two purposes. First, by rearticulating the call for further research, they situate the MI within a rational and cautious conceptual framework. That this same argument is applied on behalf of those questioning the validity of Darwin's theory of evolution, or the relation between tobacco smoke and negative health impacts, is left unstated. Second, the declared cost of action is contrasted unfavourably with the assumed degree of scientific uncertainty. In other words, the only known factor is the economic cost of action, and it is deemed both unwarranted and exorbitant. While the threat is vague, the potential damages to be incurred through governmental regulation are tangible and extremely clear. By excluding from consideration the potential benefits of precautionary action, the equation can be only partially fulfilled; it is guaranteed to result in a predicted negative economic outcome.

Fear can, of course, be mobilized on behalf of any argument. Consider the MI's warning that "just one [missile] exploded 400 kilometers above, say, Columbus, Ohio would change the life pattern of every living American – without regard to ethnic origins or political beliefs or religious views or age or economic status" ("Missile" 80). This is an appeal to humanity's biological commonality, one that emphasizes our joint susceptibility to environmental trauma. Charges of extremism and fear-mongering are commonly

levelled against environmentalists who warn of such catastrophe. This is precisely the logic behind the IPCC reports' conservative bias. But there is a reason for this tactic's prevalence; fear is a highly effective tool.

Rooting the climate debate within the metaphorical free market, the MI employs a dichotomous fear appeal and constructs a health/harm binary. The fact that climate change, left unaddressed, will likely cause substantial economic as well as environmental harm threatens to invalidate its project. This actuality is therefore simply omitted from discussion. By addressing but one dimension of the issue, the MI is able to maintain argumentative coherence: regulatory action will injure the economy, and maintenance of current economic practice assures enhanced social and material well-being. In the words of Livesey, "the effects of governmental policy, as opposed to the effects of global warming, [a]re made the cause of crisis and concern" (140).

Appeal to lifestyle preservation

Every movement that would recruit its followers from among many discordant and divergent bands, must have some spot towards which all roads lead. (Burke, "Rhetoric" 150)

The MI attempts to occupy an indeterminate site within the discursive terrain. By opposing governmental introduction of industry regulations, it argues on behalf of the economic status quo. Yet this stance necessitates an attack on the established scientific community and its recommendations for such legislative measures. It is this paradox, the assault on one established institution while lauding another's virtues, that complicates its overarching strategy. Tactical mobilization of the spirit of free inquiry is central to the attempt to reconcile, or at the least, obscure, this incongruity.

Humans make sense of the world by relating alien phenomena to familiar and understood patterns and beliefs, what Hall calls the “inventory of traditional ideas” (“Rediscovery” 73). Cultural traditions and inertia thus exert substantial influence on prevailing public opinion. As Michel-Rolph Trouillot observes, “When reality does not coincide with deeply held beliefs, human beings tend to phrase interpretations that force reality within the scope of these beliefs” (72). Echoing this insight, Burke writes, “The yearning for unity is so great that people are always willing to meet you halfway if you will give it to them by fiat, by flat statement, regardless of the facts” (“Rhetoric” 158). Within the context of debate surrounding climate science, one might readily substitute the word “unity” for “familiarity.” For integral to many cultural formations is the tendency towards stability. Crucial, then, is an articulation of that which is to be stabilized.

The MI presents a choice between two opposing paths: continued economic prosperity, or economic devastation. This is an appeal to economic self-interest and lifestyle preservation. The MI’s definition of the good life as one based upon technical progress and material accumulation is an appeal to ethics; continued material prosperity is championed as society’s core value and ambition. Presented as the ultimate goal is “economic security— the ability to continue our way of life without serious disruption and interference” (“Climate Change and National” 3). By contrast, governmental regulation is depicted as a prospective threat to society’s basic structure.

This dimension of the MI’s strategy explicitly mobilizes U.S. cultural traditions. Hovering above the neo-liberal economic narrative is an equally pervasive metaphor: that of the untamed frontier, a concept with both tangible and imaginary properties. U.S. cultural associations with this ideal date back to the nation’s founding as a refuge for

those facing religious persecution in England, to the War of Independence from 1775 to 1783, and to the nation's gradual violent expansion into the West. The authors of the U.S. constitution were heavily influenced by Enlightenment values and valorised the individual, a propensity which finds contemporary expression in demands for the rights to self-defence, personal mobility, and freedom of speech.

Such myths embody a group's cultural ideals. And persuasive strategies may benefit from the reification and exploitation of these principles, a practice which can occur unconsciously as an appeal draws upon conventional patterns of belief. In turn, a strategy cognizant of deeply ingrained beliefs stands to profit immensely. Crucial here is an appreciation of the resilience of existing cultural and socio-economic patterns, and consideration of their exerted influence upon interpretive acts. As noted by J. A. Allan, discursive coalitions are, "even if well informed... capable of constructing knowledge to address historically familiar rather than new and dangerously destabilizing risks" (185). Added to this danger are the actions of skilled rhetors who draw upon knowledge of their audiences in adapting discursive tactics to specific contexts. Perelman and Olbrechts-Tyteca observe, "In argumentation, the important thing is not knowing what the speaker regards as true or important, but knowing the views of those he is addressing" (25). Words embody values, and thus a rhetor who stimulates his audience's desires through appeals to emotion, and encourages an association between his argument and the satisfaction of those desires, maximizes the potential for successful persuasion.

Demonstrating an understanding of "when to 'spiritualize' a material issue, and when to 'materialize' a spiritual one" (Burke, "Rhetoric" 163), the MI thus employs an ambiguous representation of the scientific project. Its properties are depicted as at times

rigid, at times ephemeral. When critiquing the politicization of climate science, the MI alludes to a metaphysical strain of purity. However, when discussing the potential economic repercussions of governmental regulation, it emphasizes immediate material consequences: “Make no mistake about it, when advocates make their case for reducing energy use or moving away from oil, they are really talking about affecting how citizens live” (“Climate Change and National” 4). This point is reiterated: “The bottom line is that achieving Mr. Gore’s objective would result in economic stagnation and a reduction in our standard of living” (“Climate Zealotry” 2). In an attempt to expand this argument’s resonance into the sphere of ethics, it is argued that the governmental legislation recommended by the IPCC “At a minimum... wastes money and scientific talent”, and at worst, “will lead to policies that do significant harm to national economies and human aspirations” (“Group” 4). This reference to “human aspirations” signifies the MI’s attempt to broaden their appeal beyond a purely economic framework.

Perhaps the MI’s supreme flourish is found in an evocation of the most recent American and Canadian experience of endemic destitution:

The great depression which brought our economy to its knees and inflicted pain and suffering on men, women and children throughout the land was caused by well meaning people who pushed wrong headed (sic) tariffs and an excessively stringent monetary policy. The consequences of [Mr. Gore’s] policy preferences would be just as damaging. (“Climate Zealotry” 1)

Beyond demonstrating the MI’s tactical mobilization of fear, this passage is significant due to its claim that such devastation was caused by “well meaning people.” This discursive manoeuvre is repeated in the warning, “Actions have consequences and the consequences of policies built on illusions are borne heavily by the least well off” (“Evaluating” 3). The desired function is the same; to situate the MI within a sphere of

ethical ascendancy. Implied therein is that the MI enjoys a privileged, objective view of the debate. Others may contribute with the sincere belief that their views are both correct and imperative. However, lacking the MI's aerial and historical perspective, such views are fated to replicate human ignorance and deficiency. This is an appeal to authority and prudence, one that patronizes, and attempts to marginalize, competing viewpoints as uneducated and misguided.

Abstraction and naturalization

Allusion to a compassionate social model is an entreaty to ethics. Attempting to translate this discourse into an instrumental framework, the MI transfers its argument from an evaluative to a descriptive realm. This move aims to reify current socio-economic practice, and provides for evasion of notions of individual or national responsibility. For when the arbitrary natures of existing political and economic institutions are rendered invisible, all calls for their transformation are obviated.

Hall claims that humans consent to existing socio-political and economic systems because they either think it's beneficial to their interests, cannot imagine an alternative, or think the current status quo is natural ("Rediscovery" 65). Through appeal to lifestyle preservation, the MI targets the first of these motives. No matter how well presented, few arguments will convert an entire audience. In response to this understanding, the MI strives to appropriate, and thus eliminate, opponents' argumentative grounds. Stating "problems poorly defined are problems poorly solved" ("Climate Change and National" 1), the MI claims a knowledge deficit in the field of climate science. But the phrase might also serve as a summary of the organization's broader discursive ambitions. Two tactics

are central towards this end: obfuscation of responsibility, and assimilation of sustainable development discourse.

The MI's chief ambition is to equate economic and environmental interests in order to fuse the two and render them mutually dependent and thus inseparable. The intended result is what Carvalho labels a "discursive coalescence" (21), wherein "The very forces that could constitute a threat [a]re discursively turned into tools of legitimation and reinforcement of the existing order" (9). A second, related, desired function is to claim a monopoly regarding feasible solutions. If effective, this will subvert alternative proposals and restrict the discursive terrain. As within patriotic discourse, only one voice and language is possible. Towards this end, the language of sustainable development is employed to "harmonize economic growth with environmental protection.... [It] annihilate[s] most of the scope for critique" (Carvalho 12). Drawing additionally upon the discourse of ecological modernization, which argues environmental protection can lead to economic gains, the MI endeavours to preserve and legitimate the foundations of current economic practice whilst accommodating requisite ecological concerns. Once again, by evading consideration of which institutions should be responsible for regulating this process, it attempts to shroud the debate and potential responses in strategic formlessness. The aim is to obscure potential courses of, and agents and sites for, action.

Consider this strategy in relation to that directed towards the issue of missile defence. Elucidating relevant actors and tasks, the MI writes:

[W]e provide a succinct list of recommendations whose purpose is to focus attention on missile defense requirements and provide a programmatic basis for action. They are designed to furnish an agenda that sets forth concisely what must be done, how it should be done, and who

should do it if the United States is to deploy the robust, layered missile defense that will be essential for our national security in the years ahead. (“Missile” ix)

Essential to this proposed response framework is an “emphasis on multiple paths of technological evolution and optimization of existing systems” (“Missile” 117). In other words, the case of missile defence is presumably straightforward to address through a combination of existing technical infrastructure and political will. This characterization directly opposes that allocated to the issue of climate change. While precision is king in the former, vagueness rules in the latter.

Towards this end, a crucial shift is enacted which transfers responsibility for climate-related initiatives from the national to the international level, thereby justifying policy inaction at local, regional and national scales. The core argument hinges upon the qualitative nature of varying nations’ obligations under the Kyoto Protocol: primarily, China and India’s exemption from mandatory CO₂ emission limits due to their status as developing nations. There are multiple arguments for and against such exceptions. In brief, developing nations argue the following: the majority of historical anthropogenic CO₂ emissions are the responsibility of Western nations; such countries should shoulder the burden of tackling the problem. Second, implementation of environmental technologies requires economic growth; development must thus take precedence. Those who counter this position argue the redundancy of developing nations’ repetition of past mistakes. They claim, rather, that environmental initiatives should be implemented in concert with development projects. Demands have been made that developed nations subsidize relevant technologies towards this end. The case of China is of particular importance, for by 2008, the nation is likely to become the world’s leading emitter of

CO2 due to lack of environmental measures and reliance on coal combustion to meet its energy needs (“A Warming World”).

Indicating its allegiance, the MI situates responsibility at an abstract, globalized level. It argues, “if China and India could reduce their energy intensity to our level, emissions avoided by around 2017 would be comparable to the total reductions under the Kyoto Protocol if all signatories met their obligations, which they will not” (“Climate Change and National” 3). This passage serves two functions: it reinforces the idea that the Kyoto Protocol’s aspirations are quixotic, and also obscures the fact that the populations of China (1.3 billion) and India (1.1 billion) far exceed that of the U.S. (0.3 billion) (“World Population”). This argument presupposes that U.S. citizens are entitled to per capita emissions four times greater than those of citizens from either India or China. Because this assumption rests on a tenuous moral pretext, it is vital that the MI attempts to resecure the ethical high ground. It thus proceeds, “There is a moral imperative to help developing countries, which will soon account for 60% of greenhouse gas emissions, develop in a way that meets their economic aspirations while better controlling those emissions” (“Climate Zealotry” 2-3). Rearticulating this tactic, the MI argues:

Since most of the future growth in emissions will be from developing countries, a major focus must be to help them realize their economic aspirations, while also lowering their carbon intensity. That is clearly doable and cost-effective. In addition, it is the right thing to do. There can be no justification for ignoring serious human and environmental problems that we know how to solve—malnutrition, high mortality and disease rates, and polluted water for example—while focusing on one that we do not adequately understand and, at best, is distant. (“Climate Policy” 2)

It is impossible to draw a precise distinction between social, economic and

environmental considerations. This acknowledgment informed negotiations at the 2002 World Summit on Sustainable Development in Johannesburg. At that instrumental conference, all three elements were defined as integral pillars of sustainable development (Louka 52). The MI is thus justified in questioning the ethics of dedicating resources to an environmental issue while poverty remains ubiquitous. However, absent from its proffered list of “serious human and environmental problems that we know how to solve” is the issue of climate change. This argument is, therefore, at best a reminder that any effective solution to the issue will require joint consideration of social and economic factors. At worst, it is an attempt to exploit their audiences’ compassions in a manner which averts unwelcome attention from current U.S. economic practice and its environmental repercussions.

Chapter Six. Conclusion

Further media research

The role of media in influencing public understanding of the issue is crucial, and is a factor which demands further attention. Media play a significant role in structuring public thought. In an ideal democratic society, they provide a diversity of viewpoints. When both informed and informative, media may promote qualitative elevation, enhancement and enrichment of public opinion and deliberation. Yet, given media institutions' varying degrees of influence and selective reporting practices, there is danger that popularized information does not adequately represent a given issue's consequences. A further concern stems from news medias' inclination towards drama. While it may be argued that such institutions have an economic incentive to conform to, and thus consolidate, familiar discursive patterns of belief, within the context of climate change debate this practice is tempered by their tendency to emphasize the existence of isolated perspectives in opposition to dominant scientific belief.

Further underrepresented in dominant media is an acknowledgment that cost-effective measures for mitigating the negative environmental and socio-economic consequences of climate change are available. Such measures could achieve maximum emissions abatement per resource expenditure, and broad public awareness of the existence of such options would diminish the threat posed by groups such as the MI. As observed by Andrew Calabrese, "a lack of editorial diversity threatens to undermine the breadth, depth, and overall quality of public knowledge and discussion about issues of

vital importance” (7). The essential question is whether prevalent media discourse both accurately indicates the prevailing beliefs of the international scientific community, and further provides a broad range of opinions regarding the prudent and ethical response in light of these conclusions.

It is with an understanding of medias’ pivotal role that the MI calls upon journalists to remain distrustful of mainstream climate science:

[B]e more than a little skeptical about claims of certainty in a field dominated by uncertainty. Taking a few pieces of a complex puzzle and then filling in the blanks to promote an image or preconception does not solve the puzzle and is not journalism. (“Climate Zealotry” 3)

Beyond reaffirming that the field of climate science is crippled by an overarching aura of uncertainty, these words charges journalists with their greatest fear: the perception of biased reporting. Arguing, “It has been extensively documented that the media has a liberal bias which can lead to being more accepting of environmentalism” (“Group” 3), the MI strives to foster disproportionate coverage of the issue by insuring that their own views receive profuse representation.

Constructive measures

In response to any issue, choices must be made. And lack of certainty need not result in sustained inaction. Informed deliberation requires judgment of varying degrees of probability, the weighing of prospective benefits against potential risks. This, in turn, serves as the foundation for prudent public policy. My aim is to advocate on behalf of compelling climate science. The IPCC’s most current recommendations can and should form the basis of economically and politically sustainable national and international

institutions with mandates to promote and regulate a reduction in greenhouse gas emissions.

A template for successful cooperative international action within the context of substantial uncertainty exists in the Montreal Protocol. In response to global concern over scientific indications that chlorofluorocarbons were depleting the ozone layer, the international community ratified the Protocol in 1989. The result was an effective arrest of atmospheric ozone diminution (Choi). This case was distinct from that of climate change, in that the culprits in the former were peripheral to economic activity and readily substituted, while in the context of the latter, the germane activities form the central nerves of advanced Western industrial economies and no sufficient alternative energy sources are readily at hand. Yet the key point remains: uncertainty need not obstruct the international community from crafting a joint response to a perceived global threat.

Energy use and climate change are inextricably linked: eighty-four percent of U.S. greenhouse gas emissions are in the form of CO₂, resulting almost entirely from the combustion of fossil fuels (“Policy FAQs”). An effective solution to climate change thus entails, above all, the enactment of governmental measures directed towards a reduction in CO₂ emissions. Such a strategy has three central tenets. First, enforcement of strengthened regulations which mandate a reduction in industry emissions. Second, joint implementation of a program which both mandates investment in, and provides incentive for, the adaptation and technological development of energy efficiency and sustainable energy sources. These may take the form of solar, wind, geothermal, biomass, hydroelectric, nuclear, or hydrogen, and might be supplemented by a shift from high-carbon to lower-carbon fuels and promotion of carbon capture and sequestration

technologies. It is significant that this model encourages and mobilizes the very market structures and corporate-driven innovative frameworks that serve as the basis of the MI's suggested response mechanism. Last, discouragement of capital investment in assets that would be substantially devalued were a greenhouse gas program to be implemented would ease the economic transition to alternative sources of energy production.

These results are best encouraged through democratically transparent and accountable governmental legislation. Achieving this goal requires supplemental development of supportive infrastructure: establishment of international methods for tracking and reporting greenhouse gas emissions, and creation of a legally binding timetable for emission reductions. Central to both projects is an acknowledgment that governments must first establish rules, then subsequently modify them in light of superior knowledge and technology.

I take an optimistic approach and trust that public media literacy encourages informed public dialogue about appropriate collective and innovative responses to multiple social issues. My core premise is that accurate communication of scientific evidence enhances public scientific literacy, and thus informed civic dialogue on matters of collective environmental consequence. Resultant public opinion, in turn, ideally influences subsequent governmental policy decisions and may promote constructive and precautionary state intervention through legislative action. Within the context of critical environmental issues such as climate change, it is thus crucial to assess the relation between optimal scientific evidence and prevalent public information. The central question is: why, from amongst many, do certain forms of knowledge emerge?

This goal diverges slightly from that of the Pew Center for Global Climate Change, which defines their objective as “[the advancement of] public and private policy-makers' understanding of the climate system and the consequences of climate change for the United States” (“Environmental Impacts”). By targeting their efforts directly towards policy-makers, the Pew Center evades a problematic dimension of my argument. For my rationalization depends upon several assumptions which remain inadequately examined. Paramount are the twin contentions that, first, governmental policy will respond to public opinion, and second, that public opinion is responsive to pre-eminent scientific evidence. By advocating rational and practical civic deliberation regarding appropriate collective action on matters of common significance, my position is thus more aligned with that of the Union of Concerned Scientists, who claim, “the best way to improve public understanding of global warming issues and to create a more receptive atmosphere for policy action is for scientists to repeatedly, patiently, and strategically present accurate, credible information to the media and policymakers” (“Sound Science”).

This formula has, of course, numerous potential difficulties. One might readily argue that, due to asymmetrical access to public forums and resources, civic deliberation can never be egalitarian. This allegation is justified. Yet policy decisions need continually to be made, and the deliberative participation of a minority of citizens is better than that of none of all. An argument can also be made that the privileging of any one interpretation is elitist and authoritarian. In the sphere of religion or ethics this may indeed be the case, but in the domain of the natural sciences, some individuals are signally qualified to judge data's implications.

Last words

Persuasion is central in debate surrounding “controversial” science. As an integral aspect of communication, rhetoric is a requisite dimension of civic deliberative practice. Yet its function is unfixed. Because it sets debate agendas and directly influences policy creation, it may be employed towards socially counterproductive ends.

Drawing upon the rhetorical tradition dating back to Aristotle, this paper has tried to demonstrate the capacity for vested interest groups to deploy language to influence public opinion and serve political objectives. Such tactics are both common, and dangerous when the group in question swims against the current of existing scientific evidence and belief. While the subject addressed is climate science, my broader focus readily translates into critique of varying contemporary debates such as that between mainstream science and proponents of intelligent design. Specifically, how is language mobilized to create both doubt and conviction in the face of cogent empirical evidence?

The MI purports to champion both scientific integrity and the democratic principle of free inquiry. Because its project runs contrary to prevailing scientific belief, the latter objective is more easily achieved. But the organization is, nonetheless, obliged to engage with the scientific body of evidence. Engendered by this conflicted setting, two massive paradoxes infect the MI’s entire project. First is the discrepancy between the its proposed, technologically-driven response framework, and its concurrent attack on the proficiency of scientific knowledge. Second is its claim to scientific interpretive authority, and tandem derision of the scientific establishment (the field’s pre-eminent experts). The result is a vacillation between opposing depictions of science as at times beneficial, at others deficient and corrupt.

The argument has two central thrusts. First, scientific knowledge is insufficient to justify actions which may engender substantial economic costs. Second, political motivations compromise the credibility of those scientists who suggest otherwise. Offered as an escape clause is the assertion that, should the climate threat be genuine, salvation is assured through continued reliance upon corporate technological innovation, embedded within and driven by the market economy.

Due to this argument's internal contradictions, it is tempting to disregard the MI. But this would be unwise. It is but one of multiple organizations that labour to subvert scientific knowledge when it runs contrary to their specific ambitions. To propagate public uncertainty and thereby promote their objectives, such groups produce literature which undermines existing scientific conclusions. Such tactics are both common, and dangerous when the group in question swims against the current of prevailing scientific belief. That the MI's appeals employ the dialects of democracy, economics and science suggests the potential damage they may inflict. For elaborations upon conventional public beliefs (e.g., allusion to the principle of free inquiry, and affirmation of the present economic formation's crucial relationship to social health), may encourage uncritical reception of rhetorically-charged messages.

While the coherence of the MI's argument dissolves when situated within the broader context of dominant scientific belief, there is risk that these views exert undue influence on public understanding, and hinder the capacity for informed dialogue. Within the context of an issue with potential mass significance, we do well to assess the constellation of ideas vying for influence.

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