

Climate Conflicts:

Extricating post-Kyoto Debates in Science and Policy

By Saleem H. Ali

University of Vermont, Rubenstein School of Environment and Natural Resources

Email: saleem@alum.mit.edu

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Introduction

Climate change has been one of the most contentious environmental concerns for both scientists and policy-makers. The debate has been increasingly polarized by various interest groups that continue to challenge each other's credibility. Even the popular media has picked up on the polarization of the debate exemplified by movies such as *The Day After Tomorrow* and the recent documentary produced by former Vice President Al Gore titled *An Inconvenient Truth*. Skeptics of climate change have been equally strident in their publications ranging from titles such as

such *State of Fear* by bestselling author Michael Crichton to the recent book published by the Cato Institute titled *Meltdown: The Predictable Distortion of Global Warming*.

This paper provides a conflict assessment of the narratives on climate change in scientific circles and how they have been appropriated by various special interest groups in different parts of the world. The analysis attempts to provide clarity to the issues and assumptions being made by each side in an attempt to improve the success of future dialogue within the scientific community as well as between scientists and policy-makers. In addition a more productive policy frame for addressing many of the concerns about global warming is provided.

Questions on which the conflict is predicated

Until recently there has been little attempt by social scientists to explore the issues of climate change from a conflict resolution perspective. Dessler and Parson (2006) provide the first systematic examination of the climate change debate and suggest that four key questions first need to be recognized:

- *Is the climate changing?*
- *Are human activities responsible for the observed changes?*
- *What are the likely climate changes in the future?*

- *What will be the impacts of the future changes?*

I would add to this series a fifth question: Can human intervention to reduce these changes have any impact? This fifth question is particularly important to consider in order to formulate effective policy recommendations. The question also ties in with Dessler and Parson's suggestion that we extricate positive from normative statements about global warming – the former being expository material about the state of the world's climate and the latter implying how we would like the world to behave.

Unraveling scientific orthodoxy

The main challenge arises regarding the interface of natural versus anthropogenic impacts on the climate. Scientific methods and peer review processes are considered the touchstone for ensuring objectivity. However, proponents of climate change are also limited with an important additional imperative of time constraints to ensure effective remedial action. Therefore, the peer review process must proceed with an important normative concern in mind – if climate change is occurring, action must be imminent or else the research will be in vain. This inherent normative element in climate change research does indeed give proponents of climate change a more activist edge than other scientists.

Critics of climate change such as MIT Professor Richard Lindzen have also argued that the peer review process has itself been corrupted by the preponderance of views about climate change. An interesting critique of the peer review process in climate change from the prestigious journal *Science* is presented in Box 1. In a recent article for the *Wall Street Journal* Lindzen (2006) describes several instances where skeptics of climate change were chastised for their views. He also tries to show how any opponents of the dominant orthodoxy about global warming are “libelously” discredited and dismissed as ‘stooges of the fossil fuel industry.’”

Indeed the conflict in this regard has been stepped up a notch by a recent lawsuit filed in California in which scientists who are skeptical of global warming are being ensnared – giving further credence to allegations of censorship. The state of California, Environmental Defense, and the Natural Resources Defense Council have asked automobile companies to produce any and all communications they have had with fifteen scientists critical of global warming theories, whose research has been cited in court documents. Even the relatively liberal *Boston Globe* appeared to support Lindzen as he tries to clear his name and affirms that he has never communicated with the auto companies involved in the lawsuit and only received a total of \$10,000 from any fossil fuel sector for his research in the early nineties. The *Globe* columnist Alex Beam (2006) ended his

article on this lawsuit with the following: “Of course Lindzen isn't a fake scientist, he's an inconvenient scientist. No wonder you're not supposed to listen to him.”

Box 1: Critique of peer review process by climate skeptics

Eric Rignot and Pannir Kanagaratnam published a paper in *Science* in early 2006 (Vol. 311, pp 986-990) claiming that glaciers along the periphery of Greenland are melting at a rapidly increasing rate. Another paper on this subject was published by *Science* just last year (Vol. 310, pp.1013-1016). Ola Johannessen did not consider direct ice lost by glaciers into the ocean but instead only focused on elevations changes. Johannssen showed that increasing snowfall in Greenland was leading to greater ice accumulations than had previously been measured and this was acting to *slow* Greenland's contribution to sea level rise. It was conspicuously ignored in this new report.

Why would *Science* publish this paper [Rignot & Kanagaratnam] with no reference to Johannessen's earlier paper showing that Greenland is accumulating ice at a rate of about 5.4 ± 0.2 cm/year? Johannessen even used data from some of the same satellites. What's more, Johannessen used real data and Hanna et al., cited by Rignot, used a model of surface melt. And what does all of this have to do with global warming? A look again at real data is instructive.

Temperatures fluctuations around Greenland are part of a phenomenon -- known as the Atlantic Multidecadal Oscillation (AMO) -- that connects with temperature changes further south, in the hurricane formation regions of the tropical Atlantic. The AMO goes through, as its name suggests, multidecadal swings from being cooler than normal both in the ocean around Greenland and in the tropical Atlantic, to being warmer than normal in both places. And modelers have suggested that the AMO has been part of the natural system for at least the past 10-15 centuries. When the AMO is in its positive (warm) phase, the Atlantic hurricane seasons become active with more and stronger storms; and, apparently, Greenland's glaciers flow faster and dump more ice into the ocean.

When the AMO is in its negative (cool) phase, hurricane activity in the Atlantic is suppressed and Greenland's glaciers flow slowly. The AMO changed from negative to positive in 1995 -- and since then hurricanes have become very active and glacier output has been accelerating. There is no need to invoke global warming for any of this.

So what we have here are two stories making a lot of headlines -- Greenland is melting and hurricanes are strengthening. Both things are true. And, again, looking at real data it is apparent that at this time they are both part of a natural cycle that has been going on for thousands of years.

Excerpt from Michael 2006

At the same time, proponents of global warming have also been raising concerns about censorship but not by scientist but rather by policy-makers. Box 2 describes how NASA scientist Jim Hansen considers the government has been constraining his public communication ever since he parted ways with the Bush administration.

However, the manipulation by political forces is different from scientists insofar that it is often framed in terms of meeting public opinion rather than some objective reality. Thus politicians may claim to respond to irrational fears of the public regardless of some greater allegiance to the public good based on the most exhaustive review of science. The question of causal directionality about public opinion being shaped by advocacy and policy intervention rather than policy responding to public opinion is particularly prescient in this case. Since much of the public is not in a position to evaluate science, they are likely to believe those elements in the polity with whom they have a trusting relationship. Hence climate change becomes an issue that can be very easily manipulated by politicians depending on how the matter could be linked to other election priorities.

The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations, partly to prevent such manipulation of science by policymakers. However, concerns have been raised about the objectivity of the

assessments. For example, a recent review of the IPCC by the House of Lords (2005) in preparation for the G-8 summit stated that:

“We have some concerns about the objectivity of the IPCC process, with some of its emissions scenarios and summary documentation apparently influenced by political considerations. There are significant doubts about some aspects of the IPCC’s emissions scenario exercise, in particular, the high emissions scenarios. The Government should press the IPCC to change their approach. The Government should press the IPCC to reflect in a more balanced way the costs and benefits of climate change.”

Such criticism is not necessarily indicative of the performance of the IPCC but rather the limitations of any institution that is grappling with the synthesis of such a high degree of complexity and has multiple mandates stretching from empirical research collection to prescriptive advice for adaptation. While climate proponents are fairly confident that dissenters are a very small minority, the issue continues to be far from resolved on even numeric terms. For example a notable article by Orestes (2004) suggested that there is a trifling minority of scientists who differed from the view that anthropogenic greenhouse gases were drivers of climate. However, as a major skeptic of climate, Gerhard (2006) later pointed out, the article had ignored a petition by 17,000 signatories under the auspices of the Oregon Institute of Science and Medicine that challenges the orthodoxy.

Box 2: Example of censorship allegations by proponents of global warming

James E. Hansen, longtime director of the agency's Goddard Institute for Space Studies, said in an interview that officials at NASA headquarters had ordered the public affairs staff to review his coming lectures, papers, postings on the Goddard Web site and requests for interviews from journalists. Dr. Hansen said he would ignore the restrictions. "They feel their job is to be this censor of information going out to the public," he said. Dean Acosta, deputy assistant administrator for public affairs at the space agency, said there was no effort to silence Dr. Hansen. "That's not the way we operate here at NASA," Mr. Acosta said. "We promote openness and we speak with the facts."

In 2001, Dr. Hansen was invited twice to brief Vice President Dick Cheney and other cabinet members on climate change. White House officials were interested in his findings showing that cleaning up soot, which also warms the atmosphere, was an effective and far easier first step than curbing carbon dioxide. He fell out of favor with the White House in 2004 after giving a speech at the University of Iowa before the presidential election, in which he complained that government climate scientists were being muzzled and said he planned to vote for Senator John Kerry. Among the restrictions, according to Dr. Hansen and an internal draft memorandum he provided to The Times, was that his supervisors could stand in for him in any news media interviews. In one call, George Deutsch, a recently appointed public affairs officer at NASA headquarters, rejected a request from a producer at National Public Radio to interview Dr. Hansen, said Leslie McCarthy, a public affairs officer responsible for the Goddard Institute. Citing handwritten notes taken during the conversation, Ms. McCarthy said Mr. Deutsch called N.P.R. "the most liberal" media outlet in the country. She said that in that call and others, Mr. Deutsch said his job was "to make the president look good" and that as a White House appointee that might be Mr. Deutsch's priority.

"He's not trying to create a war over this," said Larry D. Travis, an astronomer who is Dr. Hansen's deputy at Goddard, "but really feels very strongly that this is an obligation we have as federal scientists, to inform the public." The fight between Dr. Hansen and administration officials echoes other recent disputes. At climate laboratories of the National Oceanic and Atmospheric Administration, for example, many scientists who routinely took calls from reporters five years ago can now do so only if the interview is approved by administration officials in Washington, and then only if a public affairs officer is present or on the phone. Where scientists' points of view on climate policy align with those of the administration, however, there are few signs of restrictions on extracurricular lectures or writing. One example is Indur M. Goklany, assistant director of science and technology policy in the policy office of the Interior Department. For years, Dr. Goklany, an electrical engineer by training, has written in papers and books that it may be better not to force cuts in greenhouse gases because the added prosperity from unfettered economic activity would allow countries to exploit benefits of warming and adapt to problems.

Excerpt from Revkin, 2006

In order to understand the complexities of this conflict, it is essential to understand the evolution of arguments for and against global warming. As shown in Figure 1, the problem of global warming starts with an empirical observation about an increase in various greenhouse gases (GHGs) from human sources. There is no debate about this issue, as well as the next step (rise of GHGs in atmosphere) which are accepted by all sides in the controversy (hence italicized). It is important to note that the question of endogeneity (causal directionality) is also posed at multiple levels. For example, some scientists have raised questions about whether the rise in carbon dioxide is caused by a change in climate itself, reversing part of the assumed causality. The diagram is constructed in the conventional engineering format.

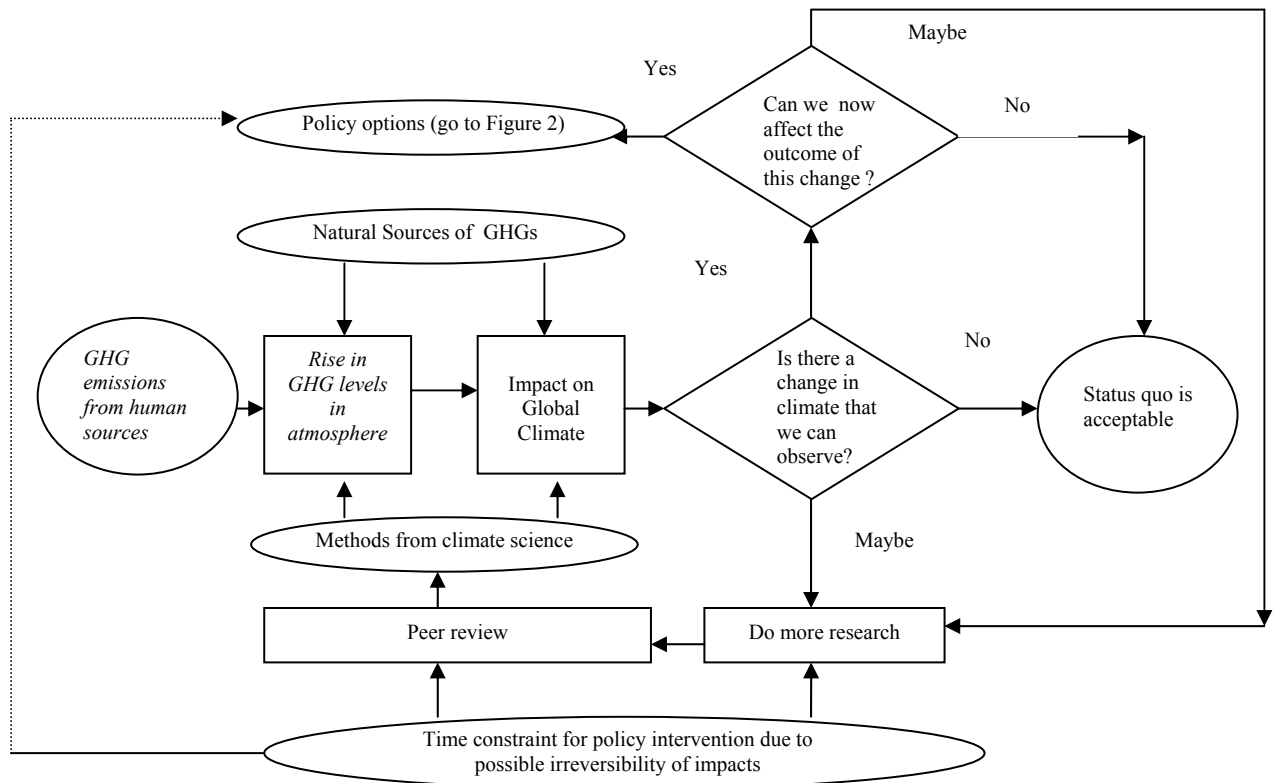
Starting off with what is known for certain, we can move along and see how differences in opinion arise, based on differing assumptions. The two decision diamonds in the diagram critically suggest how we can get stuck in a loop of uncertainty and decision paralysis in the global warming debate. The first point of indecision occurs with observational uncertainty because of the enormous complexity of variables in climate science. The second point of indecision, that can lead to a spiraling of inaction, occurs when we consider prescriptive means to reduce the impact of climate change. At this point, the inevitability of change shifts the argument to adaptation without considering.

Part of the problem with using the inevitability of change as a pretext for inaction is that the initial intention of the Framework Convention on Climate Change is missed. The convention and the subsequent Kyoto protocol was never intended to abort climate change but rather to allow for adaptation to proceed with minimal disruption to human activities. As Article 2 of the convention states:

“The ultimate objective of this Convention is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”

While critics may still feel that there is little we could do to adapt constructively to climate change, it is important to at least appreciate that there was a measured resignation to climatic change even in the original convention rather than any draconian notion of aborting change – whether natural or anthropogenic.

Figure 1: Argument flow for climate change debates



Creating division among environmentalists

Another interesting aspect of climate change has been its propensity to create divisions even within environmental ranks. This is largely due to the fact that the time sensitivity of policy response has led some environmentalists to consider this as a priority and a global emergency at the expense of other ideals. On the one hand it has led to structural condemnation of the environmental movement by writers such as Schellenberger and Nordhaus (2005), who accuse “environmentalists’ failures to the incuriosity about the human (read: social) sciences, like social psychology and their scientific fetishization of the ‘natural’ sciences.”

At the other end are green activists who are in such a state of panic about global warming that they are willing to embrace erstwhile ecological taboos such as nuclear power and large-scale hydroelectric energy. One recent confrontation of this kind occurred in the United Kingdom when veteran environmentalist James Lovelock (originator of the Gaia hypothesis) declared that only nuclear energy could save the world from global warming. However, many mainstream environmentalist have rejected this view. According to Stephen Tindale, executive director of Greenpeace UK, "Lovelock is right to demand a drastic response to climate change; he's right to question previous assumptions. But he's wrong to think nuclear power is any part of the answer. Nuclear creates enormous

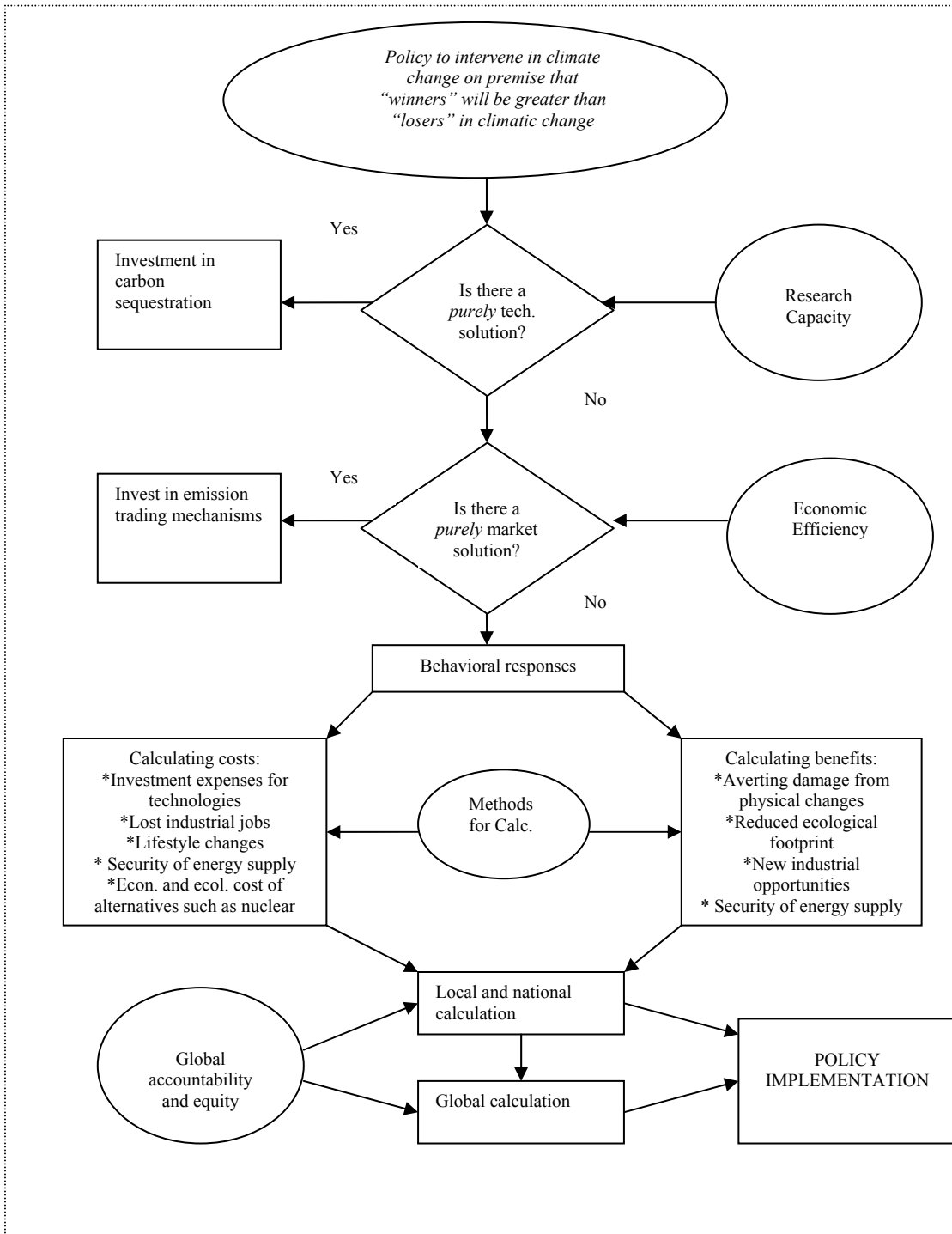
problems, waste we don't know what to do with; radioactive emissions; unavoidable risk of accident and terrorist attack" (McCarthy 2004).

There are two factors contributing to this internal conflict: the global scale of the threat posed by global warming for those who believe it has apocalyptic ramifications. Therefore, using the precautionary principle in such a context puts global warming ahead of other environmental factors. Furthermore, the immediacy for action tends to negate due diligence and care in policy formulation and quick solutions such as nuclear or large-scale hydropower are tempting to pursue. That is not to say that such alternatives might not be worth considering, but rather that much of the rhetoric from activists such as Lovelock is spurred out of intense fear rather than reasoned analysis.

Extricating the conflict

Figure 2 shows a decision sequence of how policy choice to address global warming might be considered once a decision has been made to address the issue at a policy level (a continuation from Figure 1).

Figure 2: Efficient policy decision sequence for action on climate change



It is interesting to note that main missing link between Figures 1 and 2 is the assumption that policy intervention in climate change is required because, at an aggregate level, winners from this change will be fewer than the losers. Recent writings have also raised the question that with a global problem such as global warming, it may be inappropriate to even consider localized preferences or “winners” given the enormity of the coping with the threat (Adger et al 2006). At the same time framing the issue in terms of winners and losers (at least in the short-term) might explain how conflicts of this kind arise. Hence the issue becomes one of distributive bargaining to compensate for differential impacts rather than common allegiance to a global problem.

The next part of the decision flow chart focuses on how policy-makers are likely to approach the issue in terms of prioritizing solutions. The technological question is first asked since there is always inertia regarding behavioral changes. Note also that the solution box in this regard focuses on sequestration technologies rather than other technological fixes such as hybrid cars or ethanol etc. All other technological solutions will require some level of behavioral changes, whereas sequestration technology assumes status quo behavior and a repertoire of knowledge that can be tapped.

The next step tends to be market mechanisms which also make an essential assumption about the efficiency of the market in allocating carbon credits. In this case money might compensate directly for behavioral inertia,

though in the long-run it may also create incentives for behavioral change. Again the challenge is considering whether the timeframe within which the market could function efficiently without violations is enough for effective mitigation of climate change effects. Issues of fairness and justice are also raised in this regard, since poorer communities would likely be victimized by the pollution credits bought by industry that operate there. The outcome lends credence to the hypothesis proposed by Wildavsky (1988) that implementation of the precautionary principle in market settings tends to favor those with more power and resources.

At the same time it could be argued that not addressing climate change would impact small island states that have far more to lose and have far less power in global decision-making. Hence the power struggle could be exemplified in both directions which is at the heart of the North-South divide over climate change and resulted in contentions leading up to the Kyoto Protocol.

Once we move to the next step in the decision sequence wherein behavioral responses are needed, cost-benefit analysis becomes inevitable. This is where we are also highly dependent on methods for calculating these metrics. Economic factors such as the use of high discount rates in calculating future benefits (thereby reducing the present value) are exemplifications of this phenomenon. The resulting calculation then needs to be evaluated at a local level as well as at a global level. Depending on the primacy of allegiances to global

systems versus local impact, the policy intervention is made. The impact of global governance structures in this phase of the decision analysis is crucial and the lapses in the Kyoto protocol are clearly caused by imperfections in accountability of member states to global institution such as the United Nations.

Apart from such structural factors related to global equity concerns, there are also serious problems with the way the climate change debate is presented in public forums which leads to escalation of the conflict. For example, Levy and Egan (2003) quote a former vice president for an auto company vice president about his misgivings about climate change as follows:

“There are people who have cast the automobile as a villain. It is a puritanical view, that we are having too much fun, that we have too much mobility and freedom, that suburban sprawl is bad. They think we should all live in beehives.”

Clearly the defensive posturing here is caused by a perceived threat to the car industry itself. However, the major connection between cars and climate change has more to do with the fuel being used rather than any inherent misgivings about cars per se. Since many environmentalists conflate their concerns about excessive consumption in general with climate conflicts, the results can be a framing of the debate in terms of whether cars are good or bad, rather than the more immediate question of whether fossil fuel usage should be reduced.

At the same time this provides opponents of climate change to caricature the debate and frame this in terms of a class of consumer ideologies and marginalizing environmentalists as radicals who want us to live in “beehives.” Similarly, the urgency of scientists to respond to climate change is often dismissed as being theocratic, as illustrated by the following statement by a notable European climate skeptic:

“But the human / fossil fuels emissions equals catastrophic climate change remains a public orthodoxy to be defended at all costs. It is becoming similar to the arguments between Darwinists, neo-Darwinists and Creationists, all of whom attempt to explain evolution but none of whom have any idea how to come to terms with genetics, uncertainty and modernity, let alone all of the holes in their hypotheses, in order to back up their lucrative prejudices. But together with the climate change business, the whole keeps a lot of snouts in a taxpayer-funded trough of public orthodoxy” (Kielmas, 2006)

It is also important to note that the conflict over climate change is exacerbated because visual drivers are often less palpable in climate change. When we do get large-scale visual drivers such as Hurricane Katrina in 2005 that are tenuously linked to climate change, there is dramatic dissent that dilutes any likely policy impact. Such dissent is nevertheless genuine and not easily dismissed as exemplified by the resignation of researcher Chris Landsea from the

Intergovernmental Panel on Climate Change in protest of a speech given by the lead author of the IPCC Kevin Trenberth at Harvard in which he linked the 2004 Atlantic hurricane season to climate change.

In other cases, attempts have been made to connect climate change to more palpable examples of human suffering in the domain of civil conflict or the proliferation of diseases. However, these issues have been addressed with some measure of caution by professional associations in the health sciences. For example, The Royal Society for Tropical Medicine and Hygiene stated in its proceedings that “both conflict and climate change may produce serious negative health consequences. However, there is insufficient evidence that climate change, e.g. through environmental degradation or freshwater shortages, leads to conflict as is often claimed. Also, current theory on conflict would refute this hypothesis” (Sondorp and Patel 2003).

Thus climate change continues to be a pervasive source of dissent and discord within the scientific community as well as among policy-makers. However, such dissent should not be an excuse for inaction, specially in these heady days of preventative warfare. Comparative security analysts might also argue that since the United States is willing to incur over \$500 billion dollars in preventative wars in the Middle East over a five-year timeframe, some measure of serious consideration to preventative strategies on climate change is also in order.

Conclusion: Moving towards conflict resolution?

Given the complexity of the conflict of the causality involved in climate change and the difficulty in empirical observation and ascription, it is highly unlikely that the conflict can be resolved on purely scientific terms. If we continue to articulate our call for action on purely scientific terms about diagnosing the problem, we are likely to remain entrapped in the cycle of further research or incremental policies that might not get us the results we seek. Even if we can claim to have scientific consensus through bodies such as the IPCC, the dissenting voices will remain in the background and polarization is likely to continue.

If the main goal is reduction of global warming effects, we should invest our scientific resources to provide solutions to these challenges in ways that are most socially acceptable. However, if the goal is to go beyond just global warming and change consumer behavior on ethical and moral grounds, then simply focusing on global warming as a driver is likely to muddle the planning process for preventative action.

Focusing on other derivative impacts of some drivers of global warming might also resolve the conflict because there is less teleological uncertainty about some other resource constraints. The most significant focal point of such action is

the “peak oil” movement that seeks to look for alternative sources of energy on the very simple and irrefutable premise that fossil fuels are indeed nonrenewable.

There is, however, a complication to this approach since one can also argue that despite being nonrenewable it makes sense to at least harness all the energy we can from existing supplies of fossil fuels. At this point the security argument for measured conservation of these limited supplies is likely to be more productive. Investing in alternative sources of energy is likely to be useful in the long-run because diversification makes sense from a risk management perspective.

Indeed, oil companies such as Chevron (2006) are following this approach to tackling the debate rather than being mired in diagnostic controversy regarding climate change. Gone are the days of the Global Climate Coalition – an industry effort to actively resist regulations of fossil fuel emissions. The organization was disbanded in 2002 as there was growing realization that we need a less confrontational approach to the multiple facets of fossil fuel impacts. Levy and Egan (2003) suggest that the climate debate is perhaps evolving towards the concept of “negotiated hegemony,” suggested by the great Italian political theorist Antonio Gramsci. The work of Gramsci was a critique of Marxist analysis which had suggested economic determinism as the basis of power for select classes that operate without the consent of the polity. Instead the concept of negotiated

hegemony suggests that power in such contemporary conflicts is dependent on coalitions and compromises and consent from numerous constituents.

Often an antidote to international conflicts on such matters can be grassroots community action and decisions to change policy through incremental exemplification. As long as due process and democratic procedures are used to undertake such actions through state laws (in the absence of national laws) or local programs for change, conflict can be mitigated (Petersen and Rose 2006). Local climate change action programs are following the path of grassroots efforts such as those for selling organic food that have gained national momentum.

Some analysts of climate conflicts at the North-South level have also focused on the problem of per-capita framing of emission reductions which tends to lead to defensive posturing and favoring higher population areas (that posit their own set of environmental challenges). Raymond (2006) refers to this as a “Gordian knot in climate policy.” He suggests instead that we focus on more clear distinctions between wants versus needs of fossil fuel emissions (luxury emissions versus essential emissions) and base our arguments from transitions on these principles to resolve conflicts. Yet, this approach might still not address the physical challenge of reducing the biggest contributors to emissions which might be “need-oriented” power plants rather than luxury-based cars.

Conflict over the science and policy of climate change will require us to be innovative in looking for justification for proposed solutions that tap into many of these disparate constituencies. Instead of having a debate on climate change a reframing of the issue as fossil fuel depletion and coping strategies at a global level is likely to be more consequential. Linking climate policy to other established environmental agreements as a means of “regime interplay” is also possible such as with biodiversity conservation (Kim 2004). We also must be careful to not let expeditious action on climate change lead to spillover problems from alternatives such as nuclear power. All pathways need to be considered simultaneously but without conflating issues, as suggested in the flow diagrams in this paper. By following a structured process of issue delineation and reframing of the conflict we may finally reach resolution to this confounding challenge of our times.

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