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Climate Scientists and the Intergovernmental Panel on Climate Change: Evolving Dynamics of a Belief in Political Neutrality

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Climate scientists working through the Intergovernmental Panel on Climate Change (IPCC) of the United Nations have been centrally involved in global efforts to deal with climate change. The impact of their work has been less than they expected. Multiple, complexly related factors have contributed to its limited impact, but this article will focus on how the IPCC's ontology, epistemology, and practices have contributed to the inability of climate scientists thus far to generate the kinds of policies and actions their work suggests are needed. More specifically, this article looks at philosophical, theoretical, and procedural contributors to that failure, with a focus on dichotomies and the scientists' belief in the political neutrality of their work. Fortunately, their recent work provides some evidence that they are beginning to change in ways that might eventually help their work become more impactful.

> All we need is the will to change, which we trust will be motivated by knowledge and an understanding of the science of climate change.
>
> —Rajendra Pachauri, IPCC Chairman
>
> Science has spoken. There is no ambiguity in their [*sic*] message. Leaders must act.
>
> —Ban Ki-moon, UN Secretary General[1]

The Intergovernmental Panel on Climate Change (IPCC) of the United Nations was created to guide global efforts to deal with climate change. The impact of its work has been less than the climate scientists working through it expected. There have been multiple, complexly related contributors to that disappointing result—too many to treat adequately in this article. Among them—not treated here but recognized as probably having significant impacts—are the effectiveness of lobbying groups working for interests that would likely be threatened by public policy changes needed to address climate change (cf. Oreskes & Conway, 2010), the challenge to liberal democracies and market-based economies that might be posed by some proposed responses to climate change (cf. Klein, 2014), and the difficulty of obtaining international agreements on meaningful steps to address climate change (cf. Adger, Lorenzoni, & O'Brien, 2009, esp. chaps. 10, 11, 20, 27, 29).

In doing the research that led to this article, I hoped to better understand how climate scientists themselves had contributed to the IPCC's inability to generate the kinds of policies and

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actions their work suggests is needed. Attending to the news coverage related to climate change, I was curious about the climate scientists' inability to engage the public in a way that furthered their policy agenda. In the article, I focus on the scientists' belief in the political neutrality of their work as I look at the philosophical and theoretical factors in their inability to engage effectively in public policy discussions. From its inception, the IPCC was charged with two tasks: (1) assessing the scientific information related to climate change, and (2) formulating potential response strategies (IPCC, WG1, 1990, "Preface"). The research work of the IPCC is distributed among three working groups: Working Group 1 (WG1) focuses on scientific assessment, Working Group 2 (WG2) on impacts assessment, and Working Group 3 (WG3) on response strategies. Each working group builds its report on the reports of the previous group(s). Despite the second part of its charge, the scientific assessment group has seen itself as serving in a politically neutral role. Even the portion of the IPCC most directly involved in formulating policy options, the response strategies group (WG3), has described its job as "technical, not political" (IPCC, WG3, 1990, p. xxiii).

This distinction is built into the structure and the processes of the IPCC and has its own history and parallel dynamics in the field of public administration. The claim that the scientists are not engaged in politics is simplistic (perhaps naïve) and poorly suited to coping effectively with the complex dynamics of public policy institutions in our postmodern era (cf., Funtowicz & Ravetz, 1993; Miller & Fox, 2007; Saloranta, 2001). Scientists seem not to be aware of how their belief in such dichotomies as facts/values, science/politics, and technical/political undermines their credibility and their impact.

It is not possible in this short article to address all of the literature related to postmodern public policy administration that could be useful in describing why the climate scientists' work has thus far failed to achieve its potential. The literature utilized will include philosophical, public administration, and policy analysis studies. From philosophy, the article incorporates Bruno Latour's work on dichotomies, especially facts/values and science/politics. Latour is a philosopher and sociologist of science and has written extensively on science, politics, and democracy. When it moves into the public policy and administration literature, the article references such theorists as Waldo and Wilson to explain the relevance of the politics/administration dichotomy. Then it references Stone, Fischer, and others to incorporate the technical/political dichotomy. The common thread of the sections addressing the literature is the treatment of dichotomies.

Recognizing that dichotomies are problematic is nothing new in our field. What this article contributes is a specific example of their ill-effects, an example that vividly illustrates how much ideas matter. It also connects to the theme of the symposium through its description of how the science/politics dichotomy was expected to enhance the credibility of the "politically neutral" work of the climate scientists, but instead undermined it. The article contributes to an understanding of why the IPCC (so far at least) has failed to help meet the goal it was given: "to achieve … stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (United Nations Framework Convention on Climate Change (UNFCCC), 1992, Article 2). More generally, it contributes toward understanding why dichotomous thought and the related belief in political neutrality reduce the contribution that public administrators and policy analysts might make in helping humans live a good life (cf. Waldo, 1984, p. xvi).

BRUNO LATOUR ON SCIENTIFIC PRACTICES, DICHOTOMIES, AND THE SCIENCE/POLITICS HYBRID

Bruno Latour studies science practices through a social constructivist perspective. He describes scientists and their work from the perspective of an anthropologist studying a culture, which means that his work does not accept their belief in their work as somehow outside of their culture and in a position of remove in investigating the universal truths of nature. He says that his approach to science studies involves investigating "the manufacture of objectivity" (Latour 2013, p. 6). Latour describes scientists' belief in their work's separation, their objectivity, as a central aspect of modernity, which he also describes as committed to "the double task of domination and emancipation" (1993, p. 10). He describes the phenomena (objects) of their study as artifacts created by the practices of science.

Latour's rejection of pure separation does not mean that he treats those artifacts simply as social constructs: "scientific facts are indeed constructed, but they cannot be reduced to the social dimension" (1993, p. 6). His approach is to conceive of the dichotomous separations as spectrums in which "everything happens in the middle" (1993, p. 37). He uses the term *hybrid* to draw attention to the modern practice of setting out dichotomies like nature/society and facts/values and then simultaneously (and surreptitiously) recognizing that the dichotomies misrepresent how things exist in the world and may be considered impediments[2] to our thinking and learning about the world. In a sense, our dichotomies point not to the separateness of the two sides but to the ways that the two sides interconnect, overlap, and blend. He uses a number of parallel phrasings to point to this central aspect of the modern view of the world. In discussing the dichotomy object/subject he uses the terms *quasi-object* and *quasi-subject* to point to that space in the middle where everything happens (1993, pp. 51–52). His use of the term *factish* is intended to indicate that what we commonly think of as facts are humanly constructed representations or proxies. He says that moderns need so badly to believe that the facts are out there, solid, not part of the humanly constructed world, that the facts become like religious fetishes—thus the clever neologism *factish* (2010). "The word 'fact' seems to point to external reality, and the word 'fetish' seems to designate the foolish beliefs of a subject" (Latour, 2010, p. 21). He uses the label *factish* to point to the moderns' powerful certainty in their facts, which obscures the difference between construction and reality (2010, p. 22). The factish is "that which allows one to pass from fabrication to reality" (2010, p. 35). He is arguing that scientists' belief in their data as representing facts is a belief that in effect obscures from them their own role in constructing the data.

One of the "hybridish" relationships that Latour has addressed is the relationship between science and politics. In *We Have Never Been Modern* (1993), he describes politics and science as inextricably linked:

> A single thread links the most esoteric sciences and the most sordid politics, the most distant sky and some factory in the Lyon suburbs, dangers on a global scale and the impending local elections or the next board meeting. The horizons, the stakes, the time frames, the actors … [are] caught up in the same story. (p. 1)

Their linkage, however, is fraught with challenges and misunderstandings. In his "A Politics Freed from Science" (1999), Latour uses Plato's *Gorgias* to discuss that relationship (pp. 236–265). The general topic of the essay is the relationship between scientific experts and political

discourse. According to Latour, scientific experts have to deal with the hybridishness of facts, that they are both constructed and real. When scientists enter into political discourse, they tend to obscure the factishness of facts in an attempt to assert authority. This does damage to political discussion because each actor in a political discussion needs to accept the others more or less as equals in the common pursuit of a resolution to a public problem, not as students taking "exams on things known in advance" (1999, p. 242). At one point, Latour describes political speech as speaking "in real time, in real life, and in full scale about things that no one knows for sure and that affect everyone" (1999, p. 241). "Politics is *not* about the professionals telling the people what to do" (p. 239). It is about collective decision-making on important issues "in the harsh conditions of urgency" (p. 241).

Latour says that modern scientists insist on dichotomies but simultaneously assert power by ignoring them. However, one of the characteristics of a postmodern era seems to be that people do not tend to believe in modern dichotomies. Appeals to recognize the objectivity of science do not obtain much traction today. Moreover, according to Latour, our nonmodern view does not make living on this planet easier.[3] Instead, living in a postmodern world is more complicated. As will be demonstrated below, this situation has implications for dealing with problems like global warming. For Latour, some of the questions are:

> Where are we to classify the ozone hole story, or global warming or deforestation? Where are we to put these hybrids? Are they human? Human because they are our work? Are they natural? Natural because they are not our doing? Are they local or global? (Latour, 1993, p. 50)

As one might suspect, his answer to the dichotomous classifications is that they are both. Facts, values, objects, subjects, nature, society, science, and politics are all hybridish.

THE POLITICS/ADMINISTRATION AND TECHNICIAN/ADVOCATE DICHOTOMIES: TWO KINDS OF POLITICAL NEUTRALITY CLAIMS

Latour's philosophical analysis of science practice is consonant with some of the thought in our field of public administration. Public administration, too, has participated in (some would say is founded upon) a modern dichotomy-laden worldview. For example, despite many, repeated claims of its death, belief in the politics/administration dichotomy and its corollaries regarding the political neutrality of public administration and the value-free role of experts in democratic governance remain significant aspects of many public administration theories (cf. Overeem, 2005; Svara, 1985, 2006). This is no place to attempt a comprehensive review of the literature on this dichotomy, but a quick description of its emergence and continued relevance is in order.

Although the politics/administration dichotomy is often connected to Wilson (1997) and his essay, it was more clearly espoused in Goodnow's (1900) *Politics and Administration*. According to Goodnow, politics involves developing and expressing the will of the state, and administration executes its will. Under this dichotomous framework, in executing the state's will administrators are expected to remain politically neutral, to refrain from taking sides in political controversies. For their part, politicians are to refrain from becoming involved in administration. The idea of recognizing different roles for politicians and administrators in relation to public policy has some claim to accuracy, and can be quite useful, but the dichotomous framework fails to recognize (or ignores or deliberately hides) "the extensive interaction between

politicians and administrators" (Svara, 2006, p. 122)—for example, the role of administrators in developing and communicating the policies that Goodnow suggests they should simply administer. Public administrators do not wait for policy to be adopted to enter the policymaking arena; they help to develop the policies they are to implement. Further, implementation of policy is quite complicated (Wildavsky, 1973) and commonly involves some exercise of administrative discretion affecting the substance of the policy (cf. Maynard-Moody & Musheno, 2003). In addition, because politicians recognize the shaping that takes place in implementation they often attempt to influence the implementation of policy. All members of the U.S. Congress have staff members who are tasked with doing casework for their constituents, attempting to influence the implementation of policies in ways that benefit their potential supporters. Indeed, U.S. presidents often resort to their executive authority over administrative agencies to move the implementation of policy in their preferred directions (cf. Luton, 2009).

As Waldo (1984) recognized, "we can neither live with or without the distinction, realistically separate the two nor find an agreed, proper joining .... [it is] a problem that cannot be solved in any definitive sense" (p. lv). Although politicians and administrators generally play different roles in policymaking dynamics, there is much overlap. Politicians become involved in administration, and administrators become involved in political machinations. Politics is in and of administration, and administration is in and of politics. Echoing Latour, everything happens in the middle, but the middle would not exist without the two sides.

A related and similarly unresolvable issue involves the role of policy analysts in democratic policymaking. One of the roles that public administrators play in policy development is that of policy analyst. As Heineman, Bluhm, Peterson, and Kearny (1990) pointed out, one might define the policy analyst's duties in policymaking "as including collection and organization of data, application of appropriate analytical techniques, clarification of the issues involved, and formulation of alternatives for resolution of a problem, with *perhaps* a recommendation as to the best way to go" (p. 24 [emphasis added]). The list of analytical practices Heineman described (at least until the "perhaps a recommendation" phrasing) is a good description of a technical rationalist approach; it is focused on data, technique, and formulation of alternative policies worthy of consideration. Many years ago, Lindblom (1997) said of such a rationalist approach, "For complex problems [the technical rational] approach is of course impossible" (p. 159).

This basic distinction related to policy analysis parallels the politics/administration dichotomy and can be described as differentiating the technician and advocate roles (cf. Meltser, 1976). In the technician role, the analyst-administrator would not offer a recommendation, thinking that avoiding that kind of advocacy was a way to keep out of the political aspect of policy-making, that by not making a recommendation one had simply presented the facts and avoided the values involved in policymaking. Public administration and public policy scholars have for decades discussed the phenomenon of technical experts claiming to be apolitical while carving out a special place for themselves in policymaking (cf. Ellul, 1964; Putnam, 1977; Stone, 1988). In his description of the technocratic apolitical ideology, Putnam (1977) said that technicians were "skeptical and even hostile toward politicians and political institutions," and preferred "to debate policy in practical 'programmatic' terms" (pp. 385–387). The technocratic approach to decision-making relies on "the use of experts and their technical disciplinary knowledge in the pursuit of political power and the 'good society'" (Fischer, 1990, p. 18). Even though the experts remain subordinate to the political leaders in a formal sense, the technical analyses they prepare become the informational foundations and value frameworks upon which

the political leaders focus, thus directing and limiting the options considered. It is the experts' technical ontology and epistemology that inform the decision-making. As Fischer recognized, that worldview is positivistic, mechanistic, and authoritarian. Technical values such as efficiency and effectiveness are given more weight than democratic values such as participation, equity, and fairness. Despite their beliefs and/or claims to the contrary, the technicians have not avoided values; they have moved the more technical values to the center and marginalized, obscured, or externalized other values.

Much more could be said about the dynamics of public policy making and our understandings of those dynamics. Fischer and others (e.g., Fischer & Gottweis, 2012; Miller, 2012; Roe, 1994; Wagenaar, 2011) have added to our understanding of the complex and intertwining dynamics of public policy through their contributions to the argumentative turn, interpretive policy analysis, and discourse analysis. The point here is that the technocratic approach to public policy, based as it is on an ontological and epistemological set of dichotomies, is not well suited to postmodern perspectives and dynamics. In terms of Miller's work on narratives, the technician narrative may be well designed for survival in the technocratic niche, but, because it has to survive in other habitats (e.g., international, national, regional, and local public policy deliberations) in order to effectively promote the kinds of policy actions that narrative prefers, it needs to adapt for other, not so specialized, habitats.

When it comes to making public policy, political officials, public administrators, policy analysts, technical advisors, and policy advocates are all hybridish. Deriving in part from the fact/value dichotomy, the dichotomy separating public administrators from the politics of governance misdirects us in our attempts to understand and do public policy making. Related as it is to the science/politics dichotomy, the distinction between a technical role and an advocacy role in policy analysis may be a bit too pure. As Latour and Fischer have shown us, it may be used to enhance the power of the "technicians" in ways that appear to keep them "on tap but not on top." However, in a postmodern era, an attempt to frame any participation in public policy making as "technical, not political" is quite likely to be interpreted as a power play and, therefore, to undermine the claimant's power rather than enhance it.

DICHOTOMIES, POLITICAL NEUTRALITY, AND IPCC PRACTICES

Evolving Impacts of Dichotomies

In Latour's terms, the IPCC was conceived as a quintessentially modern project. Climate science is an evolving project that is based on a view of how the world works and how we can know about the world. In the modern view of the world, dichotomies play a major role (e.g., facts/values, nature/society (the nonhuman world/the human world), science/politics, and technical analysis/advocacy. As the IPCC climate scientists may now be realizing, in postmodern/post-normal science conditions, the modern view is losing viability.

In its descriptions of the relationship between humans and the climate system, and between science and politics, the IPCC initially participated fully in what Latour (1993) has called "our strange obsession with dichotomies" (p. 103). When the United Nations Framework Convention on Climate Change (UNFCCC) spoke of "anthropogenic interference with the climate system" (Article 2), it simultaneously reaffirmed and deconstructed the nature/society dichotomy. The

idea that human activities "interfere" with the climate system implied that humans were outside of the system, not part of nature. Simultaneously, the same idea recognized that human activities are within the system, that humans are in the climate system and affecting it in ways that are expected to have significant impacts, ways that are disrupting the climate patterns we have assumed were relatively stable, patterns that we have come to think of as normal. In 1990, IPCC's scientific assessment group (WG1) reified the nature/society dichotomy by separating the "natural greenhouse gas effect" and the enhanced greenhouse effect resulting from human activity (e.g., IPCC, WG1, 1990, p. 5), thus reifying the society/nature dichotomy. In 2013, the group used the phrasing "anthropogenic forcings" instead of referring to human "interference" (e.g., IPCC, WG1, 2013, p. 15), but its definition of climate change remained consistent with the UNFCCC language:

> Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or *external* forcings such as modulations of the solar cycles, volcanic eruptions and *persistent anthropogenic changes* in the composition of the atmosphere or in land use. Note that the Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is *in addition to natural climate variability* observed over comparable time periods." The UNFCCC thus makes a *distinction between climate change attributable to human activities* altering the atmospheric composition, *and climate variability attributable to natural causes*. (IPCC, WG1, 2013, p. 1450 [emphasis added])

While its phrasing has become more fine-tuned over the years, the IPCC has worked consistently to distinguish human impact from natural fluctuations. Nevertheless, according to Latour, even "we moderns" have never been so modern as to fully believe our dichotomies. Despite the centrality of the humans/nature distinction to the scientific assessment group's work in determining the cause of global warming, its conclusion that the most significant cause is found in human activities makes it clear that humans are part of the climate system. Nonetheless, because it wants humans to take responsibility for (and do something about) climate change, the IPCC regularly emphasizes this distinction. As Latour described, despite the way in which the IPCC's scientific work inherently challenges the nature/society dichotomy, it remains wedded to it.

In climate science, construction and reality become synonymous when the scientists construct data that represent the "facts" of the history, present, and future of the earth's climate. Take, for example, global mean temperature. Climate scientists' most precise data are from recent times, a period when people have been recording climate data, such as temperatures in various places on earth's surface and in the atmosphere. Their most robust certainty is based on numbers as recorded using thermometers, but the construction of an average temperature for the earth is a complicated operation and is subject to reasonable dispute based, for example, on where the thermometers are located. When the IPCC climate scientists report temperatures from the last interglacial period, an era when thermometers had not yet been invented, they are dependent upon proxies such as "tree rings, corals, ice cores and historical records" (IPCC, WG1, 2001, p. 3). Although the numbers they use to represent the facts from the last interglacial

period are less precise (estimated ranges that are rather wide), they are no more or less factish than the current global mean temperature calculation.

The least amount of certainty is claimed regarding climate scientists' statements about possible future climates. As Moss et al. (2010) have explained, "climate scenarios are plausible representations of future climate conditions" (p. 749). The purpose behind the use of scenarios "is not to predict the future, but to better understand uncertainties in order to reach decisions that are robust under a wide range of possible futures" (p. 747). Since its inception, the IPCC has used multiple future climate scenarios. Its 1990 assessment utilized four scenarios. Scenario A represented "business as usual" and assumed an increase in global mean temperature of 3°C per decade. Scenario B assumed some increased control over greenhouse gas emissions resulting in a 2°C increase per decade. Scenarios C and D assumed greater amounts of control, resulting in smaller increases—1°C and 0.1°C, respectively.[4] The 1995, 2001, 2007, and 2013 assessments used scenarios based on Representative Concentration Pathways that assumed different levels of radiative forcing (a measurement of greenhouse gas effect on warming). Each assessment report has included a statement regarding the improvements in the models and scenarios since the last report (e.g., IPCC, WG1, 2007, p. 12; 2013 p. 13), a recognition of their being constructed, and an encouragement to see the scenarios produced using the models as ever more reliable. This does not mean that climate scientists have failed to recognize the uncertainties involved in their projections. They readily acknowledge the uncertainties and have explained that the need for a set of scenarios derives largely from uncertainties regarding future policy and/or behavioral changes that would affect the amounts and rates of GHG emissions resulting from human activities.

IPCC's dependence upon proxies, correlations, and scenarios is a significant example of how its scientific work is constructed of factish things. By describing it as constructing factishes, I do not mean to argue with the IPCC's scientific practices or conclusions. I do not doubt that human activities are causing global climate change. Similarly, Latour's examinations of science and scientific practice have often been interpreted as undermining scientists' claims to authority, and in some ways their claims to knowledge, but we both admire the effort scientists exert to better understand the world. As he sees it, "knowledge … is not a direct grasp of the plain and the visible…, but an extraordinarily daring, complex, and intricate confidence in chains of nested transformations" (2010, p. 122). Those chains of nested transformations are the steps scientists have gone through (e.g., those involved in gradually improving computer models of the climate system) to represent/construct the facts, then to believe that they are real—or not *merely* constructed, so at least real enough. It is this real vs. real enough difference that led at least one scientist to ask Latour if he believed in reality (1999, chap. 1). Climate scientists believe in reality and are doing their best to study it through their data(ish) representations and nested transformations. They see anyone who uses terms like factish as not simply studying or analyzing science but challenging it. They are offended when nonscientists ask why they should believe in the conclusions that science provides. They want the discussion about how to deal with climate change to be guided by the facts, probabilities, and scenarios they have worked so hard to construct. As one climate scientist responded when asked why he should be believed, "If people don't trust the institution of science, we're in serious trouble" (Latour, 2013, p. 3). As Latour points out, this expectation that they can rely on others' trust in the institution of science is a failure in scientists' understanding of the relationship between science and politics. In postmodern conditions, expecting people to trust institutions seems unlikely to be rewarded.

Fortunately, the IPCC climate scientists have recently become a bit more transparent about the "ishness" of their facts. For example, the scientific assessment group in its 2013 report stated:

> Science strives for objectivity but inevitably also involves choices and judgments. Scientists make choices regarding data and models, which processes to include and which to leave out. Usually these choices are uncontroversial and play only a minor role in the production of research. Sometimes, however, the choices scientists make are sources of disagreement and uncertainty. These are usually resolved by further scientific enquiry into the sources of disagreement. In some cases, experts cannot reach a consensus view. Examples in climate science include how best to evaluate climate models relative to observations, how best to evaluate potential sea level rise and how to evaluate probabilistic projections of climate change. In many cases there may be no definitive solution to these questions. (IPCC, WG1, 2013, p. 123)

This statement may be evidence that IPCC climate scientists have recognized that they are engaged in a practice that involves the construction of data and choices about interpretive frameworks. At least with regard to their scientific practices, they may be less dependent on and misled by the fact/value and constructed/real dichotomies. It seems, however, that little progress has taken place with regard to their dependence on the nature/society dichotomy.

The Science/Politics Dichotomy and Political Neutrality

Climate scientists seem to expect people to accept the authority of the IPCC as an embodiment of the institution of science, but the very existence of the IPCC is imbued with the science/politics relationship. Prior to its creation, many possibilities existed as to how climate scientists might bring climate change to the international policy agenda, and all of them would have involved some kind of relationship between climate scientists and politics. For example, a 1985 international meeting in Villach, Austria, organized by climate scientists and attended mostly by climate scientists, was not intergovernmental in its structure or representation. This kind of scientist-led organization is just one of many alternatives to the intergovernmental structure found in the IPCC. According to Agrawala (1998a), the structure of the IPCC was purposefully designed to be intergovernmental, not simply international:

> It is the intergovernmental nature of the IPCC that gives its assessments a special niche, distinct from the myriad other assessments and vendors .... the intergovernmental nature of the IPCC was in large part responsible for educating many government bureaucrats about the problem .... However, having an intergovernmental status has imposed significant costs also: IPCC assessment summaries are widely regarded as being politically negotiated, which has, at times, undermined their credibility. (p. 611)

There is good reason for people to consider the policy-maker summaries as politically negotiated. They are not adopted as official until every sentence, every phrasing, and every word in them obtains consensus "approval at the plenary session of the relevant Working Group" (Agrawala, 1998b, p. 626), and the participants in the plenaries include government officials as well as climate scientists (Shaw & Robinson, 2004).

Moreover, the IPCC became the lead organization in global climate policy largely as a function of U.S. support for it (Agrawala, 1998a, 1998b; Boehmer-Christiansen, 1994; Hulme &

Mahony, 2010). Agrawala (1998a) has explained that the United States was able to assert its influence because (1) it had most of the research expertise on climate change; (2) as the largest contributor of greenhouse gas emissions, it had a huge stake in any international policy that might be adopted; and (3) it was the biggest financial patron of the UN. Some of the interpretations of the dynamics that resulted in the IPCC are more conspiratorial than others, but every account makes it clear that the United States pushed for an *intergovernmental* organization that would involve climate scientists, governmentally employed science-related technocrats, and governmental authorities.

Another political aspect of IPCC as an institution is pointed to by the geography of its participants. The climate scientists who are involved tend to be from north of the equator; their number does not include proportional representation of scientists from the south, or from developing nations. This is more than a symbolic or distributional justice issue. It has practical implications. As the first chair of the IPCC, Bert Bolin, recognized, it complicates the trust issue: "many countries, especially developing countries, simply do not trust assessments in which their scientists and policymakers have not participated. Don't you think global credibility demands global representation?" (quoted in Agrawala, 1998b, p. 628). Since Bolin made that statement, the IPCC has worked hard at improving developing country participation, but problems related to access to information, expertise, and financial resources remain.

Far from being politically neutral, IPCC is a designedly political organization. As an intergovernmental panel, it could hardly be otherwise. Because science requires funding from sources likely to have political and policy interests, funding issues are likely to involve scientists in politics. Because the organizers decide what kinds of expertise are needed, the scientists included in IPCC work have political connections. Because government officials must approve the policy-maker summaries, these most widely read portions of the IPCC's reports are put through a political filter. As Latour suggested would be the case, when it comes to the climate science/climate politics distinction, all the action is in the middle.

Politically Neutral Policy Analysis?

The IPCC has recognized as its purpose to "provide objective information on which to base global climate change policies that will meet the ultimate aim of the [UNFCCC]—of stabilization of greenhouse gases at some level … that will 'prevent dangerous anthropogenic interference with the climate system'" (IPCC, WG1, 1995, p. xi). Each assessment consists of reports by the three working groups: scientific assessment (WG1), impacts assessment (WG2), and response strategies (WG3). The working groups produce three kinds of reports, policy-maker summary reports, the underlying, more extensive reports, and a synthesis report.[5] The underlying reports of all three groups are subject to extensive peer reviews. The policy-maker summary reports are subject to line-by-line approval at Conference of Parties meetings (Agrawala, 1998b). The synthesis report is examined by IPCC's member governments, the summary for policy-makers "line-by-line and the longer report section-by-section in a dialogue with the authors that have written the report" (IPCC Press Office, 2014).

The working group that is composed of scientists in fields related to climate science is the scientific assessment group (WG1). Much has already been said about its work in the preceding section. This section will, therefore, address the impacts assessment group (WG2) and the

response strategies group (WG3), with most of its attention directed to the response strategies group. The response strategies group's work is premised on the work of WG1 and WG2. Giving less attention to the impacts assessment group is partly a concession to space limitations. Nonetheless, because the response strategies group's work is at the heart of the science/politics interface, it is appropriate, for the purposes of this article, to give it more attention.

In public administration and policy analysis terms, the UNFCCC sets the objective and each working group does its work in furtherance of that objective. The scientific assessment group describes the problem. The impacts assessment group presents the expected impacts of the problem. The response strategies group sets out policy options. Conferences of the Parties (COPs) are international gatherings arranged by the UN to try to adopt climate-change policies. It is a classic approach to policy analysis, some version of which can be seen in almost all public administration and policy analysis basic textbooks (e.g., Bardach, 2012; Irwin, 2003; Ott & Russell, 2001; Shafritz & Hyde, 1997; Stillman, 2005; Weimer & Vining, 2005). This "rational comprehensivish" approach has long been recognized in our field as an unrealistic and overly simplified description of how public policy decisions are made.

The field of science studies has also recognized that the traditional scientific approach does not work for policy- relevant science in what is referred to as post-normal science conditions (Funtowicz & Ravetz, 1993). Post-normal science adjusts to postmodern conditions by dropping the assumption that science is value-free. The context to which it is suited is "whenever high stakes, risks and/or high uncertainty are involved in a policy-relevant issue" (Saloranta, 2001, p. 396).

The impacts assessment group adds to the scientific assessments by addressing impacts and vulnerabilities. The group's first report explained its role as "to describe the environmental and socioeconomic implications of possible climate changes" (IPCC, WG2, 1990). The impacts assessment group's 2014 report (IPCC, WG2, 2014) added risk assessment to its contribution. It also set forth some principles for effective adaptation. These principles provide evidence that the impacts assessment group has begun to recognize that IPCC's work blends facts and values, science and politics. For example, the fourth principle states:

> Adaptation planning and implementation at all levels of governance are contingent on societal values, objectives, and risk perceptions (*high confidence*). Recognition of diverse interests, circumstances, social-cultural contexts, and expectations can benefit decision-making processes. Indigenous, local, and traditional knowledge systems and practices … are a major resource for adapting to climate change. (IPCC, WG2, 2014, p. 26)

The language under the fifth principle related to decision-support similarly recognizes the importance of those who work to bridge science and decision-making.

The response strategies group (WG3) formulates policy options. Its first report stated that the group's primary task was "technical, not political. "The charge of IPCC to [the response strategies group] was to lay out as fully and fairly as possible a set of response policy options and the factual basis for those options" (IPCC, WG3, 1990, p. xxiii). The group's input to the policy options was expected to be what the field of public administration would call today "evidence-based." Nonetheless, the group recognized that "clearly the information might tend to suggest one or another option" (IPCC, WG3, 1990, p. xxiii).

The response strategies group's first report claimed that its work was "technical, not political" (IPCC, WG3, 1990, p. xxiii). It made this claim despite the group's obligation to pursue

the UNFCCC's ultimate objective—stabilizing greenhouse gas concentrations at a level sufficiently low to prevent human interference with the climate and with sufficient speed to avoid undermining sustainable economic development and food production, and "to allow ecosystems to adapt naturally" (UNFCCC, 1992, Article 2). This objective is not politically neutral and has not received sufficient political support to be effectively pursued. Even if the response strategies group was able to limit its role to technical analysis, its technical analysis would be in service to a political agenda; its analysis would be better described as value-driven, not value-neutral, and politically guided, not politically neutral.

Many have seen the UNFCCC's objective as politically charged. Some people deny that global warming is happening. Some accept that it is happening but deny that the cause is human interference. For example, in the United States, Democratic senators have been rather consistent in their recognition of human activity as the main cause of climate change, but in January 2015, one Republican voted against recognizing the existence of climate change, 15 Republicans recognized human activity as a contributor to climate change, and only five Republicans recognized human activity as a significant contributor (Goldenberg, 2015). Furthermore, the objective of UNFCCC includes a commitment to sustainable economic development, but sustainable economic development is not a politically neutral concept (cf. Zovanyi, 2013). Neither is the notion that ecosystems should be allowed to adapt naturally. Finally, the response strategy group's own belief in its political neutrality is in question; for as its report noted, "the information [in the report] might tend to suggest one or another option" (IPCC, WG3, 1990, p. xxiii). Note, however, that it was the group's view that the *information* suggested options, not the members. The factishes were speaking for themselves. The response strategies group was simply representing the factishes in dataish fashion.

Nonetheless, over the years, the response strategies group has consistently remained wedded to the claim that its work is not political. Its 1995 report described the group's charge as conducting "technical assessments of the socioeconomics of impacts, adaptation and mitigation of climate change over both the short and long term and at the regional and global levels … . The report is an assessment … and not a prescription for policy implementation" (IPCC, WG3, 1995, Introduction, paras. 1 & 3). Similarly, the group's third report "assessed the scientific, technological, environmental, economic and social aspects of the mitigation of climate change" (IPCC, WG3, 2001, Introduction). The fourth report says that the group provides "policy relevant information" (IPCC, WG3, 2007, p. vii). In its fifth and most recent report, the response strategies group continued to rely on the distinction between assessing and recommending, saying that it provides "the most authoritative and objective scientific and technical assessments, which are clearly policy relevant without being policy prescriptive" (IPCC, WG3, 2014, p. vii).

In the same report, however, the group stated that the values of "sustainable development and equity provide a basis for assessing climate policies" (IPCC, WG3, 2014, p. 5). These are values on which policymakers hold quite diverse views. The response strategies group also expressed a preference for collective action, arguing that "effective mitigation will not be achieved if individual agents advance their own interests independently" (IPCC, WG3, 2014, p. 5). Since market-based policy approaches rely on agents advancing their own interests somewhat independently, and some policy-makers view collective action as "socialistic," this position, too, is not simply policy-relevant; it is policy-prescriptive. In addition, the group appears to have assumed that the planet's atmosphere could be considered a global commons, taken the idea of the tragedy of the commons as a social science consensus, and attended only to options addressable through

international negotiations. These positions may be fairly traced back to IPCC's origins, but they contain policy-prescriptive elements. For example, in combination, these positions effectively ignore the work of Elinor Ostrom, recipient of the Nobel Prize in Economic Sciences, who questioned the tragedy and promoted the idea of polycentric approaches with a preference for smaller-scale levels of governance (cf. National Research Council, 2002; Ostrom, 2009). As Latour would have predicted, the group was claiming to believe in the facts/values dichotomy while using its factish things in service to a select set of values.

Moreover, despite its long-held claim that it does not suggest policy options, the response strategy group's first report included, as one of its main findings, that the industrialized countries should assist developing countries through financial and technical assistance (IPCC, WG3, 1990, pp. li–lii). This recommendation clearly is not based so much on facts as on values: that fairness would require the industrialized countries to assist the developing countries. Historically, the industrialized countries have benefited the most from greenhouse gas emissions, and it could be argued that developing countries should also be able to enjoy the benefits of economic development, which is commonly assumed to mean that they must increase their greenhouse gas emissions and/or be assisted in meeting the technical challenges involved in becoming developed countries that utilize renewable energy resources or nuclear energy instead of fossil fuels. The proportioning of responsibility for corrective action among industrialized countries and developing countries has been the subject of quite contentious debates at Conference of Parties meetings. It is often cited as a factor in the failure of the United States to participate in the Kyoto Protocol (e.g., Congressional Research Service (CRS), 2004). By taking a stance on this issue, the response strategies group has become involved in political and policy advocacy.

The response strategies group also took the policy position that, because the threats posed by climate change are quite severe, there is good reason to "begin by adopting response strategies that can be justified immediately even in the face of significant uncertainties" (IPCC, WG3, 1990, p. xxvi). Known as the precautionary principle, the idea of proceeding to reduce risks despite scientific uncertainties has been incorporated into more than 90 international agreements, including the 1992 Treaty of the European Union, but it has never been incorporated into U.S. national or state laws (Osofsky & McAllister, 2012). In the Wikipedia entry on the precautionary principle, the only example of a government in the United States that has adopted it is the city of San Francisco. Again, this is a policy-prescriptive position.

There are other ways that the response strategies group has evidenced a preference for some values over others in the parameters it has set for its analyses. According to its title, the group's 1995 report was to address "the economic and social dimensions of climate change," but in its own description, the assessment focused "on economic studies; material from other social sciences is found mostly in the chapter on equity and social considerations" (IPCC, WG3, 1995, Introduction, para. 3). A preference for economic analysis is also found in the 2007 report, which provided "an in-depth analysis of the costs and benefits of different approaches to mitigating and avoiding climate change" (IPCC, WG3, 2007, p. v). Putnam would have predicted this; his list of the fundamental tenets of a technocratic ideology includes "preferring to debate policy in practical 'programmatic terms,' " being "strongly committed to technological progress and material productivity," and being "less concerned about the distribution questions of social justice" (as quoted in Fischer, 1990, p. 22). IPCC's bias toward the physical sciences has long been recognized (Shackley & Skodvin, 1995). One of the more recent studies revealed that only 12 percent of the peer-reviewed literature used by IPCC was from the social sciences,

with the largest portion of that coming from the field of economics (Bjurström & Polk, 2011). In response to this criticism, the most recent analysis by the response strategies group broadened its work to include "literature on the scientific, technological, environmental, economic and social aspects of mitigation of climate change" (IPCC, WG3, 2014, p. 4). It is not clear whether this list was intended to be in priority order, but it is not in alphabetical order, and so may well indicate a continuing preference for the scientific and technological.

The work of the response strategies group may provide the most obvious evidence of the hybridish activities of the IPCC, but the scientific assessment and impacts assessment groups also operate somewhere in the middle of the facts/values, science/politics, and technician/advocate dichotomies. The establishment of the IPCC was a political act that was politically motivated. The IPCC's practices are hybridish blends of science and politics, and its reports are both peer-reviewed and politically negotiated. Despite IPCC's claims to political and policy neutrality, its work advocates policy positions and is directly involved in some of the more politically contentious aspects of global climate change policy-making.

CONCLUSION

Climate change policymaking involves climate scientists in political decision-making, which means that science and politics are both involved; so are facts and values and the technical and the political. The IPCC's climate scientists may think they have removed their technical role from the political decision-making in which they are involved, but others see the situation quite differently, and view IPCC's climate scientists as "a 'lobby' like any other" (Latour, 2013, p. 4). This is standard fare in policymaking, and should not be expected to be significantly different when the topic is climate change. Public preferences and choices engage values as well as facts, and the competition and conflict involved in trying to influence decisions include the use of tactics and strategies designed to promote the values and policies one favors and weaken the public perception of policies one opposes.

The climate scientists of IPCC have made a modicum of progress toward recognizing that their work is not value-free, but they still rely too heavily on an ontology that assumes a world in which climate science can be separated from climate policy and politics. As the quotation from IPCC Chairman Rajendra Pachauri at the beginning of this article indicates, most of the scientists think that they have done their work and now it is up to the politicians and policy-makers to gather the "political will" to take effective action. This argument, however, is based on the kind of dichotomous thinking that Latour has revealed as problematic. The scientists may think they are separate, but they are in the middle. Moreover, climate scientists are not the only ones who accept the science/politics dichotomy. The quotation from UN Secretary General Ban Ki-moon indicates that some major players in climate change policymaking dynamics agree that the scientists have done their part and now it is up to the political leaders.

The discussion in this article contends that ontologies based on dichotomies are ill suited to post-normal science and postmodern public policy dynamics. Climate scientists are involved in the politics and policymaking about how our political, social, and economic structures and institutions need to adjust to meet the challenges we expect to face as a result of climate change. Blaming a lack of political will is an insufficient response, because it is based on a presumed separation between science and politics, a separation that does not exist.

The IPCC's climate scientists are aware of (and frustrated by) their ineffectiveness in influencing climate change policy. This article suggests some changes in perspective that might help them improve their impact. It argues that ontologies and epistemologies influence our actions and ways of living—and this includes our science, our politics, and our policy-making. Climate scientists might be well advised to recognize that ontologies and epistemologies based on dichotomies may have contributed to the absence of adequate, substantive climate change policies. As Latour has pointed out, when it comes to facts and values, science and politics, politics and administration, and the like, everything happens in the middle.

Climate scientists have behaved like the kind of experts that Fischer warned us about. They seem to want to guide public policy, but not to participate as equals in policymaking deliberations. They do not want government officials or nongovernment organization representatives to examine the factishness of their facts or be concerned about the uncertainties of their projections. But in postmodern conditions of post-normal science, neither the public nor public administrators are likely to be satisfied with their assurances and their claims of being above the political fray.

People in the field of public policy administration have long been aware of the problem of the role of experts in public policy-making. Experts want to be accorded a special role in policymaking, to be seen as objective sources of information who are not interested in promoting a policy agenda. But this claim is a power play. Policy-makers and administrators see the power play, and are not willing to grant the experts the deference to authority they desire. In public policy, scientists may play a valuable role in educating and informing, but they will not be suffered as authoritative.

Public policy-making involves hybridish blendings of facts and values, science and politics, information and judgment. All citizens, none of them "more equal" than the others, need to assess information, to determine priorities, and to persuade others as best they are able. Even Woodrow Wilson, in an essay wrought with dichotomous thought, argued that whoever would effect a policy change "must first educate his fellow-citizens to want some change. That done, he must persuade them to want the particular change he wants" (1997, p. 21). The IPCC's belief in its political neutrality has diminished its ability to persuade some people of the need to respond to the challenges posed by climate change and others of the wisdom of the policy directions they prefer.

The IPCC cannot wish away the postmodern condition, the post-normal situation of policy-relevant science. It cannot convince others that its science has no political aspect, that it is simply "sticking with the facts" and leaving the political/policy decision-making to others. Its facts are factish, both real and socially constructed. Human society is in and of nature—and vice versa. Science is in and of politics, and politics is in and of science. Today, we are not inclined to see facts as separate from values, nature as untrammeled by society, humans and nonhumans as living separate existences, and science as outside of politics. In our era, an engagement in politics that does not realize this is likely to increase problems, not reduce them.

NOTES

1. Both opening quotations come from an Associated Press story on the release of the synthesis report from the IPCC's fifth climate assessment. The assessment report was released November 2, 2014. The story was accessed November 3, 2014 at: http://hosted.ap.org/dynamic/stories/E/EU_UN_CLIMATE_REPORT?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT.

2. Latour calls them *speech impediments*.
3. Latour prefers the term *nonmodern* to *postmodern*. He is not entirely comfortable with what he thinks postmodernism represents.
4. Each of the scenarios used in 1990 had ranges of temperature increase, but I am only reporting the mid-range estimate, the purported "best estimate." For example, Scenario A assumed a temperature increase of 2°–5°C, with 3°C representing the mid-range or best estimate.
5. In addition, IPCC has produced a number of special reports on such things as managing extreme events, renewable energy sources, carbon dioxide capture, technology transfer, emissions scenarios, land use, and aviation. It has also produced a collection of methodology reports treating such topics as how to inventory emissions and assess impacts, and a few supplementary reports.

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